

KEY TO THE ISOPODS OF THE ATLANTIC COAST OF  
NORTH AMERICA WITH DESCRIPTIONS OF NEW  
AND LITTLE KNOWN SPECIES.

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American naturalists have added much to our knowledge of the Atlantic coast isopoda.

In 1818 Thomas Say published *An Account of the Crustacea of the United States*, which was the first attempt to contribute to the knowledge of the fauna of North America. In 1853 a number of new species from Grand Manan were described by William Stimpson. A report on the invertebrate animals of Vineyard Sound, by A. E. Verrell and S. I. Smith, followed in 1874, and in 1880 Oscar Harger's valuable work on the Isopoda of Vineyard Sound and Adjacent Waters was published.

In addition to the work done by American naturalists, about this time the Danish naturalists Schiøedte and Meinert, in their monograph of the *Cymothoide*, published descriptions and figures of a number of new species from the West Indies. A few years later (1887) H. J. Hansen gave an account of the fauna of Greenland, and in 1890 the same author greatly increased the number of known species of isopoda from the West Indies.

More recently Adrien Dollfus (1896) reported on some new West Indian *Armadillididae*, and Ives in 1894 described some new species from Yucatan and Vera Cruz.

Norman and Stebbing and others to be mentioned later have likewise contributed to a knowledge of the North American fauna.

The aim of the present paper is to give a complete list of all the described species of isopoda on the Atlantic coast of North America, including Greenland and the West Indies.

In preparing the synopses of the families and genera, definitions and keys from many authors have been used, those of greatest value

having been taken from the published works of Sars, Stebbing, Norman and Stebbing, Hansen, Schiøedte and Meinert, and Budde-Lund.

Some of the species herein described appeared in the diagnosis by the author of North American Isopoda.<sup>1</sup>

The present paper is based on material contained in the U. S. National Museum.

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<sup>1</sup> American Naturalist, XXXIV, 1900, pp. 207-230, 295-309.

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ANALYTICAL KEY TO THE TRIBES OR SUPERFAMILIES OF ATLANTIC COAST ISOPODA.<sup>1</sup>

- a. Legs of first pair cheliform. Uropoda terminal. Pleopoda, when distinctly developed, exclusively natatory .. I. CHELIFERA OR TANAIIOIDEA (p. 500).
- a'. Legs of first pair not cheliform.
- b. Uropoda lateral.
- c. Uropoda forming together with the terminal segment of the abdomen a caudal fan. Pleopoda for the most part natatory.
- II. FLABELLIFERA OR CYMOTHOIDEA (p. 505).
- c'. Uropoda valve-like, inflexed, arching over the pleopoda, which to a great extent are branchial..... III. VALVIFERA OR IDOTEOIDEA (p. 537).
- b'. Uropoda terminal.
- c. Free forms.
- d. Pleopoda exclusively branchial, generally covered by a thin opercular plate (the modified first pair)..... IV. ASELOTA OR ASELOIDEA (p. 550).
- d'. Pleopoda fitted for air-breathing ..... V. ONISCOIDEA (p. 560).
- c'. Parasitic forms..... VI. EPICARIDEA OR BOPYROIDEA (p. 576).

## I. CHELIFERA OR TANAIIOIDEA.

## ANALYTICAL KEY TO THE FAMILIES OF CHELIFERA.

- a. Body scarcely attenuated behind. Mandibles without palp. Superior antennæ with one multiarticulate flagellum. Anterior maxillæ with only a single masticatory lobe and a one-jointed palp; posterior ones quite rudimentary. Second pair of legs ambulatory in character. Epignath of maxillipeds narrow, falciform ..... Family I. TANAIDE (p. 500).
- a'. Body narrow, produced, depressed. Mandibles with a three-jointed palp. Superior antennæ with two multiarticulate flagella. Anterior maxillæ with two masticatory lobes and a two-jointed palp; posterior ones well developed and setose. Second pair of legs with a large, broad, flat hand. Epignath of maxillipeds large, laminar, branchial in character.
- Family II. APSEUDIDE (p. 504).

## Family I. TANAIDE.

## ANALYTICAL KEY TO THE GENERA OF TANAIDE.

- a. Pleopoda only three pairs, which are densely setose. Uropoda simple, short, single-branched. Eyes present..... 1. *Tanais*.
- a'. Pleopoda five pairs. Uropoda double-branched.
- b. Eyes wanting.
- c. Inner branch of uropoda 2-3 jointed. Pleopoda in female very small, or rudimentary.
- d. Incubatory pouch formed only by two lamellæ issuing from bases of fourth pair of legs. Pleopoda in female rudimentary. Gnathopods alike in both sexes. Mandibles well developed, with cutting edge coarsely denticated.
2. *Cryptocope*.
- d'. Incubatory pouch normal. Pleopoda in female small, sometimes wanting. Gnathopods in female of normal appearance, hand dilated, fingers strong, thumb serrulated; in male slender, fingers simple. Mandibles very small and feeble in structure, with cutting edge narrow..... 3. *Leptognathia*.
- c'. Inner branch of uropoda 8-9 jointed. Pleopoda well developed.
4. *Alaotanaïs*.

<sup>1</sup>Sars's analytic key has been used with slight modifications. Sars's *An Account of the Crustacea of Norway*, II. Isopoda (1896), Pts. I, II, p. 3.

*b*. Eyes present.

*c*. Gnathopods in male imperfectly chelate, without any finger, or with finger very short and immovable..... 5. *Heterotanaïs*.

*c'*. Gnathopods in male with chelæ fully developed.

*d*. Gnathopods in male sometimes very much elongated, with carpus attenuated, hand very large, oblong, finger elongate and curved, immovable, strongly tuberculate within. Thoracic appendages not specialized into an anterior and a posterior series. Marsupium of female formed of eight large lamellæ from the first four free segments..... 6. *Leptocheilia*.

*d'*. Gnathopods in male with chelæ very stout, the distal section of the penultimate joint extremely broad, with a toothed margin. Thoracic appendages specialized into an anterior and a posterior series. Marsupium of female of the normal structure..... 7. *Neotanaïs*.

## 1. TANAIIS Audouin and Milne-Edwards.

### ANALYTICAL KEY TO THE SPECIES OF TANAIIS.

*a*. Abdomen composed of six distinct segments. Sixth segment terminated posteriorly by a blunt median projection. Without transverse setiferous bands crossing first and second abdominal segments. Body robust and tapering. Uropoda four jointed..... 1. *Tanaïs robustus* Moore.

*a'*. Abdomen composed of five segments. Sixth segment without blunt median projection, rounded. With transverse setiferous bands crossing first and second abdominal segments. Body slender, elongated. Uropoda three jointed.  
2. *Tanaïs cavolinii* Milne-Edwards.

### 1. TANAIIS ROBUSTUS Moore.

*Tanaïs robustus* MOORE, Proc. Acad. Nat. Sci. Phila., 1894, p. 90.

*Habitat*.—New Jersey.

### 2. TANAIIS CAVOLINII Milne-Edwards.

*Tanaïs cavolinii* MILNE-EDWARDS, in Audouin and Milne-Edwards, Précis d'Entomologie, I, 1828, pl. XXIX, fig. 1; Hist. Nat. des Crust., III, 1840, p. 141, pl. XXXI, fig. 6.

*Tanaïs tomentosus* KRÖYER, Naturhist. Tidssk., IV, 1842, p. 183; (2) II, 1847, p. 412; Voy. en Scand., Crust., 1849, pl. XXVII, figs. 2 a-q.—LILLJEBORG, Öfvers. Vet. Akad. Förh., Arg., VIII, 1851, p. 23; MEINERT, Crust. Isop. Amph. Dec. Danie, 1877, p. 86.

*Crossurus vittatus* RATUKE, Fauna Norwegens, 1843, p. 39, pl. 1, figs. 1-7.

*Tanaïs hirticaudatus* BATE, Rep. Brit. Assoc., 1860, p. 224, 1861.

*Tanaïs vittatus* LILLJEBORG, Bidrag Känn. Crust. Tanaid., 1865, p. 29.—BATE and WESTWOOD, Brit. Sess. Crust., II., 1866, p. 125.—STEBBING, Trans. Devon. Assoc., 1874, p. 7; 1879, p. 6; Ann. Mag. Nat. Hist. (4), XVII, 1876, p. 78.—VERRILL, Am. Jour. Sci., X, 1875, p. 38.—HARGER, Proc. U. S. Nat. Mus., II, 1879, p. 162; Report U. S. Fish Com., 1880, Pt. 6, pp. 418, 419, pl. XIII, figs. 81-82.

*Tanaïs tomentosus* G. O. SARS, Crust. of Norway, II, Pt. 1, 1896, p. 12, pl. v.

*Tanaïs cavolinii* DOLLFUS, Bull. Soc. Zool. de France, XXI, 1897, p. 207; Mém. de la Soc. Zool. de France, XI, 1898, p. 35.—NORMAN, Ann. Mag. Nat. Hist., (7) II, 1899, pp. 332, 333. (See Norman for synonymy.)

*Habitat*.—Noank, Connecticut; Long Island Sound; Greenland; also west coast of Norway; British Isles; West France; Azores; Mediterranean.

## 2. CRYPTOCOPE Sars.

## 3. CRYPTOCOPE ARCTICA Hansen.

*Cryptocope arctica* Hansen, Vidensk. Meddél. fra den Naturh. Foren. i Kjøbh., 1887, p. 180, pl. vii, fig. 1-1c.

*Habitat*.—Greenland; Kara Sea.

## 3. LEPTOGNATHIA G. O. Sars.

## ANALYTICAL KEY TO THE SPECIES OF LEPTOGNATHIA.

- a. In female inner branch of uropoda twice as long as outer. The second or first free segment of thorax about two-thirds as long as the third, which in turn is about equal to the fourth and fifth. Sixth and seventh segments progressively somewhat shorter. Propodus of first pair of legs less robust than carpus ..... 4. *Leptognathia cæca* (Harger).
- a'. In female inner branch of uropoda more than three times as long as outer. The second or first free segment of thorax about same size as the last one, both being shorter than the others. Propodus of the first pair of legs scarcely smaller than carpus ..... 5. *Leptognathia longiremis* (Lilljeborg).

## 4. LEPTOGNATHIA CÆCA (Harger).

*Paratanais cæca* HARGER, Am. Jour. Sci., XV, 1878, p. 378.

*Leptochelia cæca* HARGER, Proc. U. S. Nat. Mus., II, 1879, p. 164; Report U. S.

Commissioner of Fish and Fisheries, 1880, Pt. 6, pp. 427, 428, pl. xiii, fig. 91.

*Leptognathia cæca* NORMAN and STEBBING, Trans. Zool. Soc. Lond., XII, 1886, Pt. 4, p. 110.

*Habitat*.—Massachusetts Bay, off Salem, Provincetown, Massachusetts.

*Depth*.—Surface to 48 fathoms.

## 5. LEPTOGNATHIA LONGIREMIS (Lilljeborg).

*Tanais longiremis* LILLJEBORG, Bidrag till Kännedomen om de inom Sverige och Norrige förekommande Crustaceen af Isopodernas Underordning och Tanaidernas Familj, Upsala Univ. Arsskr., Math. og Naturv., I, 1865, p. 23.

*Tanais islandicus* G. O. SARS, Archiv for Math. og Naturvid., Christiania, 1876, p. 346.

*Leptognathia longiremis* G. O. SARS, Archiv for Math. og Naturvid., 1880, p. 41; Norwegian North Atlantic Expedition, 1876-1878, Crustacea, I, 1885; II, 1886, p. 79, pl. vii, figs. 17-28; Account of Crust. of Norway, II, 1896-1899, p. 27, pl. xii. — HANSEN, Dijnphna-Togtots zoologisk-botanske Udbytte, 1886, p. 185; Vidensk. Meddél. fra den Naturh. Foren. i Kjøbh., 1887, p. 179, pl. vi, figs. 9-9b. (See Hansen for synonymy.)

*Habitat*.—Greenland (Hansen); also Scotland (Scott); Norway; Iceland; Denmark.

*Depth*.—35 to 40 fathoms.

## 4. ALAOTANAIS Norman and Stebbing.

## 6. ALAOTANAIS HASTIGER Norman and Stebbing.

*Alaotanais hastiger* NORMAN and STEBBING, Trans. Zool. Soc. Lond., XII, 1886, Pt. 4, pp. 113, 114, pl. xxiii, fig. 2.

*Habitat*.—Lat. 59° 11' N., long. 50° 25' W.

*Depth*.—1,750 fathoms.



## 5. HETEROTANAIS G. O. Sars.

## 7. HETEROTANAIS LIMICOLA (Harger).

*Paratanais limicola* HARGER, Am. Jour. Sci., XV, 1878, p. 378.

*Leptocheilia limicola* HARGER, Proc. U. S. Nat. Mus., II, 1879, p. 163; Report U. S. Commissioner of Fish and Fisheries, 1880, Pt. 6, p. 424, pl. XIII, figs. 87, 88.

*Heterotanaeis limicola* NORMAN and STEBBING, Trans. Linn. Soc. Lond., XII, 1886, Pt. 4, p. 109.

*Habitat.*—Massachusetts Bay, off Salem.

*Depth.*—48 fathoms.

## 6. LEPTOCHELIA Dana.

## ANALYTICAL KEY TO THE SPECIES OF LEPTOCHELIA.

- a. Gnathopods in male greatly elongated, with tuberculate immobile finger. Upper antennæ three-jointed, and with rudimentary flagellum in female, much more elongated, and with a multi-articulate flagellum in male.
- b. Outer branch of uropoda one-jointed.
- c. Inner branch of uropoda five-jointed. Antennulæ, with basal segment nearly one-half the length of the whole organ, are more than one-third as long as the body..... 8. *Leptocheilia rapax* Harger.
- c'. Inner branch of the uropoda six-jointed. Antennulæ, with basal segment about one-third the length of the whole organ, are about two-thirds as long as body..... 9. *Leptocheilia savignyi* (Krøyer).
- b'. Outer branch of uropoda two-jointed..... 10. *Leptocheilia minuta* Dana.
- a'. Gnathopods in male not greatly elongated. Upper antennæ three-jointed, not elongated in male.
- b. Inner branch of uropoda six-jointed. Terminal abdominal segment pointed posteriorly ..... 11. *Leptocheilia lubia* (Krøyer).
- b'. Inner branch of the uropoda five-jointed. Terminal abdominal segment rounded behind ..... 12. *Leptocheilia* (?) *filum* (Stimpson).

## 8. LEPTOCHELIA RAPAX Harger.

*Leptocheilia rapax* HARGER, Proc. U. S. Nat. Mus., II, 1879, p. 163; Report U. S. Commissioner of Fish and Fisheries, 1880, Pt. 6, p. 424-426, pl. XIII, figs. 89, 90.

*Habitat.*—Annisquam, Massachusetts.

*Depth.*—One-half fathom.

## 9. LEPTOCHELIA SAVIGNYI (Krøyer).

*Tanaeis savignyi* KRØYER, Nat. Tidsskr., IV, p. 168, pl. II, figs. 1-12.

*Tanaeis edwardsii* KRØYER (female), Nat. Tidsskr., IV, p. 181, pl. II, figs. 13-19.

*Leptocheilia algicola* HARGER (female), Report U. S. Fish Com., 1880, Pt. 6, pp. 421-423, pl. XIII, figs. 83, 84a-b, 85.

*Habitat.*—Great Egg Harbor, New Jersey; also England; France; Azores; Mediterranean; Madeira.

*Depth.*—Found on surface.

## 10. LEPTOCHELIA MINUTA Dana.

*Leptocheilia minuta* DANA, Am. Jour. Sci., VIII, 1849, p. 425; U. S. Exp. Exped., 1852, XIV, p. 800, pl. LIII, figs. 5a-d.

*Delochocheilia forresti* STEBBING, Ann. and Mag. Nat. Hist., (6) XVII, 1896, pp. 49-56.

*Leptocheilia minuta* STEBBING, Ann. Mag. Nat. Hist. (6), XVII, 1896, pp. 156-160.



*Habitat*.—West Indies; also Fiji Islands.

*Depth*.—Shallow water.

#### 11. LEPTOCHELIA DUBIA (Krøyer).

*Tanaïs dubius* KRØYER, Nat. Tidsskr., IV, p. 178, pl. II, figs. 20–22.

*Leptocheilia edwardsii* (male) BATE and WESTWOOD, Brit. Sess. Crust., II, 1868, p. 134.

*Tanaïs filum* HARGER, Report U. S. Commissioner of Fish and Fisheries, 1874, Pt. 1, p. 573 (279).—VERRILL, Report U. S. Commissioner of Fish and Fisheries, 1874, Pt. 1, p. 381 (87).

*Paratanaïs algicola* (male) HARGER, Am. Jour. Sci., XV, 1878, p. 377.

*Leptocheilia algicola* (male) HARGER, Proc. U. S. Nat. Mus., II, 1879, p. 162; Report U. S. Commissioner of Fish and Fisheries, 1880, Pt. 6, pp. 421–423, pls. XII, fig. 80, and XIII, fig. 86.

*Leptocheilia dubia* NORMAN and STEBBING, Trans. Linn. Soc. Lond., XII, 1886, pt. 4, p. 108.

*Habitat*.—Noank, Connecticut; Woods Hole and Provincetown, Massachusetts; also Island of Guernsey, British Channel; Ireland; Atlantic coast from Brittany to Senegal and Teneriffe; Mediterranean; Brazil.

*Depth*.—Surface to one-half fathom.

#### 12. LEPTOCHELIA (?) FILUM (Stimpson).

*Tanaïs filum* STIMPSON, Mar. Inv. Grand Manan, 1853, p. 43.—HARGER, Am. Journ. Sci., XV, 1878, p. 378.

*Leptocheilia filum* HARGER, Proc. U. S. Nat. Mus., II, 1879, p. 164; Report U. S. Commissioner of Fish and Fisheries, 1880, Pt. 6, p. 427.

*Habitat*.—Gulf of St. Lawrence.

*Depth*.—8 fathoms.

#### 7. NEOTANAIS Beddard.

##### 13. NEOTANAIS AMERICANUS Beddard.

*Neotanaïs americanus* BEDDARD, Challenger Report, XVII, 1886, pp. 124, 125, pl. XVI, figs. 4–6.

*Habitat*.—Southeast of New York; 38° 34' N. lat., 72° 10' W. long.; also 35° 39' S. lat., 50° 47' W. long.

*Depth*.—1,240 fathoms

### Family II. APSEUDIDÆ.

#### ANALYTICAL KEY TO THE GENERA OF APSEUDIDÆ.

- a. Lower antennæ with a scale articulated to the end of the second joint. Head and first thoracic segment coalesced.
- b. Exopods present on both pairs of gnathopods..... 8. *Apseudes*.
- b'. Exopods absent on both pairs of gnathopods..... 9. *Typhlapseudes*.
- a'. Lower antennæ without a scale. Head and first two thoracic segments coalesced..... 10. *Sphyrapus*.

## 8. APSEUDES Leach.

## 14. APSEUDES GRACILIS Norman and Stebbing.

*Apsseudes gracilis* NORMAN and STEBBING, Trans. Zool. Soc. Lond., XII, 1886, Pt. 4, p. 95-97, pl. xx.

*Habitat.*—Davis Strait, lat. 59° 10' N., long. 50° 26' W., also in the North Atlantic.

*Depth.*—1,750 fathoms.

## 9. TYPH LAPSEUDES Beddard.

## 15. TYPH LAPSEUDES NEREUS Beddard.

*Typhlapseudes nereus* BEDDARD, Proc. Zool. Soc. Lond., 1886, Pt. 1, p. 115; Report on the Scientific Results of the Expl. Voyage of H. M. S. Challenger, Zool., XVII, pp. 112, 113.

*Habitat.*—Off Sombbrero Island.

*Depth.*—450 fathoms.

## 10. SPHYRAPUS Norman and Stebbing.

## 16. SPHYRAPUS MALLEOLUS Norman and Stebbing.

*Sphyrapus malleolus* NORMAN and STEBBING, Trans. Zool. Soc., XII, 1886, p. 98, pl. XXII, figs. 2, 3.—BONNIER, Annales de l'Univers. de Lyons, 1896, p. 665, pl. XXXI, fig. 1.

*Habitat.*—South of Cape Farewell, Greenland; also 39° 39' N. lat., 9° 39' W. long., off coast of Portugal; south of Rockall; Bay of Biscay.

*Depth.*—1,450 fathoms.

## II. FLABELLIFERA or CYMOTHOIDEA.

## ANALYTICAL KEY TO THE FAMILIES OF FLABELLIFERA.

- a. Legs in adult in six, apparently only five, pairs . . . Family III. *Gnathiidae* (p. 506).
- a'. Legs in adult in seven pairs.
  - b. Uropoda lateral and superior, outer branch arching over base of telson. Body cylindrical, narrow, elongated . . . . . Family IV. *Anthuridae* (p. 507).
  - b'. Uropoda lateral.
    - c. Abdomen consisting of six segments.
      - d. Uropoda with both branches developed; mostly lamelliform.
        - e. <sup>1</sup> Maxillipeds with the palp free; the margins of the last two joints more or less setose, never furnished with hooks.
        - f. Mandibles with the distal half stout, very conspicuous, uncovered, or with only the anterior margin concealed; from the base toward the middle directed forward and a little outward.
        - g. Mandibles with the rather broad, more or less tridentate, cutting edges meeting squarely behind the large upper lip; the secondary plate and peculiar equivalent for the molar well developed. First maxillæ having the plate of the first joint armed with three spines, that of the third with many. Second maxillæ of moderate size, the three free plates very setose. Maxillipeds with the palp rather broad, very setose . . . . . Family V. *Cirolanidae* (p. 510).

<sup>1</sup> Points from e to e' inclusive are from Hansen's analytical key to the Cirolanidae, Vidensk. Selsk. Skr., 6th ser., natur. og math. Afd. V, 1890, p. 317.

*g'*. Mandibles with the distal part produced into a long prominent process, the pair much overlapping; the secondary plate and molar evanescent. First maxillæ having the plate of the first joint unarmed, of the third carrying one very long spine. Second maxillæ small and feeble, the free plates almost rudimentary, with few setæ. Maxillipeds with the palp narrowed, not very setose.

Family VI. *Corallanidæ* (p. 517).

*f'*. Mandibles with the distal half narrow, most or all of it concealed by the upper and lower lips; from the base toward the apex directed gradually inward..... Family VII. *Aleironidæ* (p. 519).

*e'*. Maxillipeds with the palp embracing the cone formed by the distal parts of the mouth organs, the inner upper margin and apex never setose, the apex and sometimes the inner upper margin, at least in the males and in females without eggs, being furnished with outward-curved hooks.

*f*. Mandibles with the secondary plate very often visible; palp with no inflated joint. Maxillipeds commonly seven-jointed, sometimes four-jointed, the last joint in the latter case rather short, obtuse. Antennæ long, unequal, with well-defined peduncle and flagellum.

Family VIII. *Egidæ* (p. 520).

*f'*. Mandibles with no secondary plate; the palp in adults with first joint or both first and second joints inflated. Maxillipeds always four-jointed, last joint rather long and narrow, subacute. Antennæ much reduced, without clear distinction between peduncle and flagellum.

Family IX. *Cymothoidæ* (p. 525).

*d'*. Uropoda with one of the branches almost obsolete or rudimentary—not lamelliform..... Family X. *Limnoriidæ* (p. 532).

*e'*. Abdomen consisting of less than six segments. Abdomen with two segments. Uropoda with one branch fixed, immovable.

Family XI. *Spheromidæ* (p. 532).

### Family III. GNATHIIDÆ.

#### 11. GNATHIA Leach.

##### ANALYTICAL KEY TO THE SPECIES OF GNATHIA.

*a*. Mandibles in male with the basal part ornamented on the superior margin with an elevated crest, which is irregularly dentate. Legs furnished with many spiny processes ..... 17. *Gnathia cristata* (Hansen).

*a'*. Mandibles in male without elevated crest on the superior margin. Legs without spiny processes.

*b*. Mandibles in male with slight notch outside, inner edge obtusely produced in the middle, tip acute, slightly incurved. Front of head not produced in the middle beyond the antero-lateral angles.... 18. *Gnathia elongata* (Krøyer).

*b'*. Mandibles in male carinate on outer side near the middle, the carina ending in a tooth-like process, irregularly and bluntly toothed near the base within, turned upward at apex. Front of head produced in the middle much beyond the antero-lateral angles ..... 19. *Gnathia cerina* (Stimpson).

#### 17. GNATHIA CRISTATA (Hansen).

*Anceus cristatus* HANSEN, Vidensk. Meddel. naturh. Foren. i. Kjoebh., 1887, p. 182, pl. VII, fig. 2-2a.

*Habitat*.—72° 32' lat. N., 58° 51' long. W.

*Depth*.—116 fathoms.

## 18. GNATHIA ELONGATA (Krøyer).

*Auceus elongatus* KRØYER, Voy. en[Scand., Crust., pl. xxx, fig. 3a-g; Naturh. Tidsskr. Ny R. II, p. 388, 1847.—HANSEN, Vidensk. Meddel. naturh. Foren in Kjøebh., 1887, p. 182.

*Gnathia elongata* G. O. SARS, Crust. of Norway, II, Pts. 3, 4, p. 55, 1897, pl. xxiii, fig. I.

*Habitat*.—West Greenland; also coast of Finmark; Lofoten Islands; Kara Sea.

Hansen says that it is impossible to decide whether *Pranzina reinhardi* belongs to this or to another species of *Gnathia*. Krøyer's two original specimens have not been preserved, and although in the Copenhagen Museum there are four specimens of Krøyer's species identified, it can not be known if one or two of these are the original specimens.

## 19. GNATHIA CERINA (Stimpson).

*Praniza cerina* STIMPSON, Mar. Inv. Grand Manan, 1853, p. 42, pl. III, fig. 31.—VERRILL, Am. Jour. Sci., VI, 1873, p. 439; VII, 1874, pp. 38, 41, 411, 502; Proc. Am. Assoc., 1873, pp. 350, 354, 358, 362, 1874.

*Auceus americanus* STIMPSON, Mar. Inv. Grand Manan, 1853, p. 42.

*Gnathia cerina* HARGER, Proc. U. S. Nat. Mus., II, 1879, p. 162; Report U. S. Commissioner of Fish and Fisheries, 1880, Pt. 6, p. 410-413, pl. XII, figs. 75-79.

*Habitat*.—Bay of Fundy; Massachusetts Bay; off Salem; Gulf of Maine; Casco Bay; Gulf of St. Lawrence.

*Depth*.—10 to 220 fathoms.

## Family IV. ANTHURIDÆ.

ANALYTICAL KEY TO THE GENERA OF ANTHURIDÆ.<sup>1</sup>

- a. Labium terminating in two rounded lobes. Mandibles with cutting edge of two or three blunt teeth, and a semicircular saw in place of molar and spine-row; palp three-jointed. First maxillæ simple, with apical teeth. Maxillipeds with three to six broad flattened joints.
- b. First five segments of abdomen coalesced into single segment in female.
- c. Maxillipeds three-jointed. Flagella of both pairs of antennæ few jointed in female; of first multiarticulate in male.....12. *Anthura*.
- c'. Maxillipeds four-jointed. Flagella of both pairs of antennæ rudimentary, of the first pair not greatly developed in male .....13. *Cyathura*.
- b'. Segments of abdomen distinct. Maxillipeds six-jointed.....14. *Anthelura*.
- a'. Labium terminating in two points, acuminate. Mandibles without teeth, lancet-like, lobes at base forming channel. First maxillæ spear-like, distally channelled and serrate. Maxillipeds elongate, with four to five joints, the second of which is elongate. Abdomen with six segments and telson distinct. Antennæ in both sexes with many-jointed flagella....15. *Calathura*.

<sup>1</sup>Stebbing's key to the Anthuridæ has been used as given in Trans. Zool. Soc. Lond., XII, 1886, Pt. 4, pp. 121, 122.

## 12. ANTHURA Leach.

## 20. ANTHURA TENUIS (Harger).

*Ptilanthura tenuis* HARGER, Am. Jour. Sci., XV, 1878, p. 377; Proc. U. S. Nat. Mus., 1879, II, p. 62; Report U. S. Commissioner of Fish and Fisheries, 1880, Pt. 6, p. 406-408, pls. xi, xii, figs. 71-74.

*Anthura tenuis* NORMAN and STEBBING, Trans. Linn. Soc. Lond., XII, 1886, Pt. 4, p. 124.

*Habitat*.—Noank Harbor, Connecticut; Long Island Sound; off Watch Hill, Rhode Island; off Block Island; Waquoit, Vineyard Sound; Casco Bay, Maine; Grand Manan, New Brunswick.

*Depth*.—Surface to 19 fathoms.

## 13. CYATHURA Norman and Stebbing.

## 21. CYATHURA CARINATA (Krøyer).

? *Anthura gracilis* DE KAY, Zool. New York, Crust., p. 44, pl. ix, fig. 34, 1844.

*Anthura carinata* KRØYER, Naturh. Tidsskr. (2), II, p. 402; Voy. en Scand., pl. xxvii, fig. 3.—SCHÖEDTE, Krebs, Sugem., Naturh. Tidsskr. (3), X, p. 211, pl. iv, figs. 1-14; Ann. Nat. Hist. (4), XVIII, 1876, p. 253.—MEINERT, Crust. Amphip. et Decap. Danie, Naturh-Tidsskr (3), XI, 1877, p. 77; XII, 1880, p. 470.

*Anthura polita* STIMPSON, Proc. Acad. Nat. Sci. Phil., VII, 1856, p. 393.—HARGER, Proc. U. S. Nat. Mus., II, 1879, p. 162.

*Anthura brunnea* HARGER, Report U. S. Fish Com., Pt. 1, 1874, p. 572 (278).—VERILL, Report U. S. Fish Com., 1874, Pt. 1, p. 426 (132).

*Anthura polita* HARGER, Report U. S. Fish Com., 1880, Pt. 6, pp. 398-402, pl. xi, figs. 68, 69.

*Cyathura carinata* NORMAN and STEBBING, Trans. Zool. Soc. Lond., XII, 1886, Pt. 4, p. 124-125.

*Habitat*.—Norfolk, Virginia; Great Egg Harbor, New Jersey; Long Island Sound; Noank Harbor, Connecticut; off Block Island; East Providence, Rhode Island; Vineyard Sound; Gloucester, Massachusetts; Greenland; Denmark.

*Depth*.—Surface to 19½ fathoms.

## 14. ANTHELURA Norman and Stebbing.

## 22. ANTHELURA ABYSSORUM Norman and Stebbing.

*Anthelura abyssorum* NORMAN and STEBBING, Trans. Zool. Soc. Lond., XII, 1886, Pt. 4, p. 127-128, pl. xxvii, fig. 2.

*Habitat*.—Near entrance of Davis Straits, lat. 59° 10' N., long. 50° 25' W.

*Depth*.—1,750 fathoms.

## 15. CALATHURA Norman and Stebbing.

ANALYTICAL KEY TO THE SPECIES OF CALATHURA.

- a. Eyes not conspicuous. First pair of antennæ with flagellum twelve jointed, longer than the length of the head. Second pair of antennæ with the flagellum twelve jointed. First three segments of thorax bounded laterally by carinæ. Terminal segment of body triangular, acute at apex, margin not crenulate. Superior or outer branch of uropoda oval in form, slightly dentated. Inner branch acutely triangular. . 23. *Calathura branchiata* (Stimpson).
- a'. Eyes conspicuous. First pair of antennæ with flagellum seventeen jointed, more than twice as long as the length of the head. Second pair of antennæ with the flagellum twenty-three jointed. First three segments of thorax not bounded laterally by carinæ. Terminal segment of body linguæ, rounded posteriorly, with crenulate margin. Superior or outer branch of the uropoda narrow, elongated, not dentated. Inner branch rounded.

24. *Calathura crenulata*, new species.

## 23. CALATHURA BRANCHIATA (Stimpson).

- Anthura branchiata* STIMPSON, Mar. Inv. Grand Manan, 1853, p. 43.—VERILL, Am. Jour. Sci., V, p. 101, 1873; VII, 1874, pp. 42, 411, 502; Proc. Am. Assoc., 1873, pp. 350, 357; Report U. S. Fish Com., 1874, Pt. 1, p. 511 (217).—HARGER, Report U. S. Fish Com. 1874, Pt. 1, p. 573 (279).—SMITH and HARGER, Trans. Conn. Acad., III, 1874, p. 16.
- Paranthura branchiata* HARGER, Report U. S. Fish Com., 1880, pp. 402-405, pl. XI, fig. 70.—AXEL OHLIN, Bidrag till Kannedomen om Malakostralsfaunan i Baffin Bay och Smith Sound, 1895, pp. 12, 13.
- Paranthura norvegica* G. O. SARS, Bidrag till Kundskaben om Dyrelivet paa vore Havbanken, Vidensk. Selsk. Forhandl., 1872, p. 88.
- Anthura arctica* HELLER, Crust. Pycnogoniden und Tunicaten der k.-k. Österr. Ungar. Nordpol Expedit., 1876, p. 14, pl. IV, figs. 2-12.—G. O. SARS, Prodrom. descrip. Crust. et Pycnogon. in exped. Norveg., 1876, in Archiv for Mathemat. og Naturvidenskab, p. 347.
- Calathura branchiata* NORMAN and STEBBING, Trans. Linn. Soc. Lond., XII, 1886, Pt. 4, pp. 131-133, pl. XXVI, fig. 1.

*Habitat*.—Bay of Fundy; Vineyard Sound; Georges Bank; Gulf of Maine; Casco Bay; Nova Scotia; between Misaine Bank and Middle Ground; between Middle Ground and Halifax; 70° 8' N. lat., 74° 20' W. long.; also off Norway, Scotland, Ireland, and between England and Bay of Biscay.

*Depth*.—10 to 200 fathoms.

## 24. CALATHURA CRENULATA, new species.

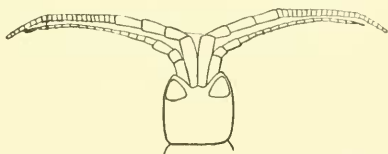


FIG. 1.—HEAD OF CALATHURA CRENULATA.

Head half as long as first thoracic segment, frontal margin with small median point and prominent lateral angles. Eyes large, dis-



tinct, and very black. First pair of antennæ more than twice as long as the length of the head; flagellum about seven-teen jointed. Second pair of antennæ somewhat longer than first pair, with joints of flagellum stouter; flagel- lum about twenty-three jointed.

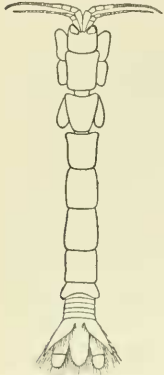


FIG. 2.—CALATHURA  
CRENULATA.

First six thoracic segments long and narrow; second segment narrower posteriorly than anteriorly; last segment very short, one-third shorter than preceding segment. Abdomen with all the segments distinct. Terminal segment long, linguæ in shape, rounded posteriorly with crenulate margin. Outer branch of uropoda arching over telson, but not meeting in center; narrow, elongated. Inner branch of uropoda extending beyond telson, rounded posteriorly, and shorter than peduncular joint; inner margin crenulate. Abdomen about equal in length to fifth and sixth thoracic seg- ments taken together.

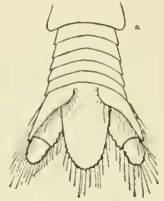


FIG. 3.—ABDOMEN.

First pair of gnathopods large, subche- late; second pair of gnathopods and first pair of pereopods subchelate, small. Other pereopods ambulatory, slender.



FIG. 4.—FIRST  
GNATHOPOD.

One specimen (type) sent by Mr. F. Stearns to the U. S. National Museum comes from between Nassau and Andros Island, Bahamas. Another specimen was taken by the U. S. Fish Commission steamer *Albatross* off Cape Catoche, Yucatan.

*Type*.—Cat. No. 23900, U.S.N.M.

### Family V. CIROLANIDÆ.

#### ANALYTICAL KEY TO THE GENERA OF CIROLANIDÆ.

- a. No branchiæ developed at the base of the pleopoda. Eyes situated on the superior side and very often also on the inferior side of the head.
  - b. Peduncle of second antennæ five jointed. Plate of second joint of maxillipedes furnished with hooks. Uropoda with inner angle of peduncle produced.
    - c. First and second pairs of pleopoda equal in length with at least the inner branch submembranaceous..... 16. *Cirolana*.
    - c'. First pair of pleopoda with both branches hard, and forming a large opercu- lum; second pair of pleopoda submembranaceous ..... 17. *Conilera*.
    - b'. Peduncle of second antennæ four jointed. Plate of second joint of maxillipedes without hooks. Uropoda with inner angle of peduncle very little produced. Pleopoda with both branches submembranaceous. Superior antennæ with first joint of peduncle quite short, and extended straight in front at a right angle to remaining part of the antenna..... 18. *Eurydice*.
- a'. Branchiæ well developed at the base of the pleopoda. Eyes developed only on the inferior side of the head ..... 19. *Bathynomus*.



## 16. CIROLANA Leach.

## ANALYTICAL KEY TO THE SPECIES OF CIROLANA.

- a.* Fifth abdominal segment, with lateral angles free, not covered by fourth segment.
- b.* Body short. Terminal abdominal segment tricarinated. Inner branch of uropoda much longer than outer branch. First pair of antennæ short, reaching only posterior margin of head; second pair not armed with brushlike structure on flagellum. Sides of head angulated. Frontal lamina forming a large, rounded projection, extending beyond the apex of the head, and separate from the frontal process ..... 25. *Cirolana sphaeromiformis* Hansen.
- b'.* Body elongate, ovate. Terminal abdominal segment smooth. Inner branch of uropoda shorter than outer branch. First pair of antennæ long, reaching the posterior margin of the first thoracic segment; second pair armed with a brushlike structure on flagellum. Sides of head rounded. Head produced in front, contiguous with frontal lamina.  
26. *Cirolana mayana* Ives.
- a'.* Fifth abdominal segment, with lateral angles covered by the fourth segment.
- b.* Frontal lamina posteriorly or clypeus anteriorly produced hornlike, especially so when seen from the side.
- c.* First pair of antennæ short, reaching only to the posterior margin of the head. Without indications of four low tubercles on head. Terminal abdominal segment armed with eight spines ... 27. *Cirolana minuta* Hansen.
- c'.* First pair of antennæ long, reaching the posterior margin of the first thoracic segment. With indications of four low tubercles on head. Terminal abdominal segment without spines, crenulate on its posterior margin ..... 28. *Cirolana virginiana* Richardson.
- b'.* Frontal lamina and clypeus unarmed, not produced horn-like; anterior margin of the clypeus connected with the frontal lamina.
- c.* Frontal lamina narrow, elongate, from four to six times longer than broad.
- d.* Extremity of exterior margin of inner branch of the uropoda emarginate.
- e.* Terminal segment emarginate at its extremity.  
29. *Cirolana concharum* (Stimpson).
- e'.* Terminal segment not emarginate at its extremity.  
30. *Cirolana impressa* Harger.
- d'.* Extremity of exterior margin of the inner branch of the uropoda not emarginate.
- e.* Second pair of antennæ long, extending beyond the posterior margin of the third thoracic segment.
- f.* Eyes small, black, longer than wide. Branches of uropoda narrow, lanceolate, somewhat elongated; inner branch almost three times longer than wide. Clypeus smooth, even. Terminal segment posteriorly rounded..... 31. *Cirolana borealis* Lilljeborg.
- f'.* Eyes large, brown, as long as wide. Branches of uropoda short; inner branch hardly twice longer than wide. Clypeus with margin raised all around and in the middle, surrounding two impressed areas. Terminal segment truncated obliquely with apex acute.  
32. *Cirolana gracilis* Hansen.
- e'.* Second pair of antennæ short, reaching the middle of the first thoracic segment ..... 33. *Cirolana polita* (Stimpson).
- e'.* Frontal lamina broad, short, scarcely twice as long as wide.
- d.* Terminal segment truncate..... 34. *Cirolana obruncata*, new species.
- d'.* Terminal segment not truncate, rounded.

e. Body two and two-thirds longer than broad. Second pair of antennæ reach the posterior margin of fourth thoracic segment. Outer branch of uropoda with apex bifid. Color, light brown.

35. *Cirolana parva* Hansen.

e'. Body three and two-thirds longer than broad. Second pair of antennæ reach the posterior margin of third thoracic segment. Outer branch of uropoda with apex not bifid. Color, white.

36. *Cirolana albida*, new species.

25. **CIROLANA SPHÆROMIFORMIS** Hansen.

*Cirolana sphaeromiformis* HANSEN, Vidensk. Selsk. Skr. (6), V, 1890, pp. 351-353, pl. IV, figs. 3-3g.

*Habitat*.—St. Thomas, West Indies.

26. **CIROLANA MAYANA** Ives.

*Cirolana mayana* IVES, Proc. Phil. Acad. Nat. Sciences, 1891, pp. 186-187, pl. VI, figs. 3-10.

*Habitat*.—Coast of Yucatan; Santa Marta, U. S. Columbia.

27. **CIROLANA MINUTA** Hansen.

*Cirolana minuta* HANSEN, Vidensk. Selsk. Skr. (6), V, pp. 347, 348, pl. III, figs. 5-5d; pl. IV, figs. 1-1f, 1890.

*Habitat*.—St. Thomas, West Indies.

28. **CIROLANA VIRGINIANA** Richardson.

*Cirolana virginiana* RICHARDSON, Am. Nat., XXXIV, p. 216, 1900.

Body not quite twice as long as broad, oval, thickset. Head transverse, with indications of four small tubercles, two on the anterior portion, between the eyes, and two on the posterior portion. Eyes large, lateral. First pair of antennæ long, nearly as long as the second pair, reaching the posterior margin of the first thoracic segment; flagellum twelve jointed. Second pair of antennæ extend to the middle of the third thoracic segment; flagellum eighteen jointed.

First thoracic segment one and a half times longer than any of the other segments. Following segments of equal length.

First abdominal segment almost entirely concealed by last thoracic segment. Four succeeding segments of equal length. Terminal segment very short and narrow, not longer than the four abdominal segments taken together, posteriorly rounded and crenulate. Both branches of the uropoda crenulate. Inner branch broad and equalling in length the terminal segment. Outer branch narrower and a little shorter than inner branch.

Abdomen minutely granulose.

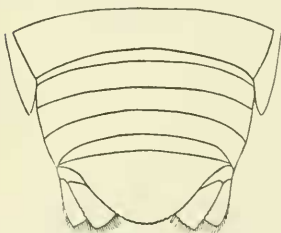


FIG. 5.—ABDOMEN OF *CIROLANA VIRGINIANA*.

Color. light brown.

Two specimens were collected by the U. S. Fish Commission steamer *Albatross* in Chesapeake Bay.

Depth.—81 fathoms.

Type.—Cat. No. 6350, U.S.N.M.

### 29. CIROLANA CONCHARUM (Stimpson).

*Ega concharum* STIMPSON, Mar. Inv. Grand Manan, 1853, p. 42.—LÜTKEN, Vidensk. Meddel., 1859, p. 77, 1860.

*Conilera concharum* HARGER, Report U. S. Commissioner of Fish and Fisheries, 1874, Pt. 1, p. 572 (278).—VERRILL, Report U. S. Commissioner of Fish and Fisheries, 1874, Pt. 1, p. 459 (165).

*Cirolana concharum* HARGER, Proc. U. S. Nat. Mus., 1879, II, p. 161; Report U. S. Commissioner of Fish and Fisheries, 1880, Pt. 6, pp. 378-381, pls. ix, x, figs. 58-63.

*Habitat*.—Currituck, North Carolina; Charleston, South Carolina; Woods Hole, Massachusetts; Vineyard Sound; Block Island; Long Island Sound; Halifax, Nova Scotia.

Depth.—Surface to 18 fathoms.

### 30. CIROLANA IMPRESSA Harger.

*Cirolana impressa* HARGER, Bull. Mus. Comp. Zool. Harvard College, XI, 1883, No. 4, pp. 93-95, pl. 1, figs. 3-3d, pl. 11, figs. 3-3c.—VERRILL, Report U. S. Commissioner of Fish and Fisheries, 1883, p. 559, pl. xxxvi, fig. 165.

*Habitat*.—40° 2' 24" N. lat., 70° 23' 40" W. long.; 40° 3' N. lat., 70° 31' W. long.; 39° 57' N. lat., 69° 47' W. long.; 39° 55' 28" N. lat., 69° 47' W. long.; Chesapeake Bay.

Depth.—115 to 321 fathoms.

### 31. CIROLANA BOREALIS Lilljeborg.

*Cirolana borealis* LILLJEBORG, Ofvers. Vet. Akad. Forh., 1851, p. 23.

*Cirolana hirtipes* HELLER, Verhandl. der k. k. Zoologisch-Botanischen Gesellschaft in Wien, XVI, 1866, p. 742.

*Cirolana spinipes* BATE and WESTWOOD, Brit. Sess. Crust., II, p. 299.—HARGER, Bull. Museum Comparative Zoology, XI, No. 4, 1883, p. 91, pl. 1, figs. 2-2d; Pt. 2, figs. 1-1c.

*Cirolana borealis* HANSEN, Vidensk. Selsk. Skr. (6), V, 1890, pp. 321, 322, pl. 1, figs. 1-1v.—G. O. SÆRS, Crust. of Norway, II, Pts. 3, 4, 1897, p. 70.

*Habitat*.—Off Cape Florida; Atlantic coast of North America; also British Isles; Shetland Isles; coast of France; Mediterranean at Naples; coast of Norway.

Depth.—233 fathoms.

### 32. CIROLANA GRACILIS Hansen.

*Cirolana gracilis* HANSEN, Vidensk. Selsk. Skr. (6), V, 1890, pp. 329-331, pl. 11, fig. 2-2g.

*Habitat*.—St. Thomas, West Indies.

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## 33. CIROLANA POLITA (Stimpson).

*Ega polita* STIMPSON, Mar. Inv. Grand Manan, 1853, p. 41.—LÜTKEN, Vidensk. Meddel., 1859, p. 77, 1860.—VERRILL, Am. Jour. Sci., V, 1873, p. 16.

*Conilera polita* HARGER, in Smith and Harger, Trans. Conn. Acad., III, 1874, pp. 3, 22.—VERRILL, Am. Jour. Sci., VII, 1874, p. 411.

*Cirolana polita* HARGER, Proc. U. S. Nat. Mus., 1879, II, p. 161; Report U. S. Commissioner of Fish and Fisheries, 1880, Pt. 6, pp. 381, 382.

*Habitat*.—Bay of Fundy; Cape Cod Bay; Salem, Massachusetts; Georges Bank; east of Banquereau.

*Depth*.—17 to 190 fathoms.

## 34. CIROLANA OBTRUNCATA, new species.

Head transversely oval. Eyes small, lateral. First pair of antennæ short, reaching a little beyond the posterior margin of the head; flagellum twelve jointed. Second pair of antennæ reach the middle of the third thoracic segment; flagellum, twenty-one jointed.

Thoracic segments subequal; first one somewhat longer than others. Epimera of second, third, and fourth segments posteriorly rounded; of fifth, sixth, seventh, and eighth segments pointed posteriorly.

First abdominal segment partly covered by last thoracic segment, following four segments subequal; terminal segment with its posterior margin truncate and minutely crenulate.

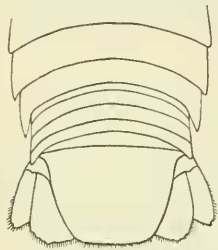


FIG. 6.—ABDOMEN AND LAST FOUR THORACIC SEGMENTS OF *CIROLANA OBTRUNCATA*.

Uropoda not longer than posterior margin of terminal segment; inner branch longer and broader than outer branch, and crenulate. Both branches rounded posteriorly.

Color, brown.

Single specimen from Kingston, Jamaica; taken from surface.

*Type*.—Cat. No. 23901, U. S. N. M.

## 35. CIROLANA PARVA Hansen.

*Cirolana parva* HANSEN, Vidensk. Selsk. Skr. (6), V, 1890, pp. 340, 341, pl. II, fig. 6-6b; pl. III, fig. 1-1d.

*Habitat*.—Key West, Florida; Gulf of Mexico; St. Thomas, West Indies; St. Croix, West Indies; between the delta of the Mississippi and Cedar Keys, Florida.

*Depth*.—25 to 27 fathoms.

## 36. CIROLANA ALBIDA, new species.

Body narrow, elongate, three and two-thirds times longer than broad. Head transverse, eyes large, black. First pair of antennæ

extend to the end of the peduncle of the second pair; flagellum nine jointed. Second pair of antennæ extend to the posterior margin of the third thoracic segment; flagellum, twenty-three jointed.

First thoracic segment but little longer than those following, which are subequal in length.

First abdominal segment entirely covered by seventh thoracic segment. Terminal segment triangulate with rounded extremity, its posterior margin denticulate and bearing eight spines, the spines alternating with the teeth. The uropoda reach the end of the terminal segment; the inner branch is obliquely truncate posteriorly, and armed with spines; the outer branch is shorter and more slender than the inner branch, is pointed at its extremity, and armed posteriorly and on its external margin with spines.

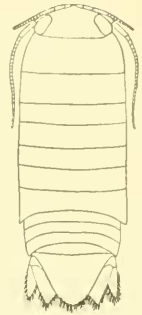


FIG. 7.—CIROLANA ALBIDA.

Color white, with scattered black spots.

Several specimens were taken by Mr. E. L. Morris at Sugarloaf Key, Florida.

Type.—Cat. No. 23902. U.S.N.M.

17. CONILERA Leach.

37. CONILERA CYLINDRACEA (Montagu).

*Oniscus cylindraceus* MONTAGU, Trans. Linn. Soc. Lond., VII, 1803, p. 71, pl. VI, fig. 8.

*Conilera montagui* LEACH, Diction. d. Scienc. Natur., XII, p. 348.—DESMAREST, Consid. Crust., p. 304.—MILNE-EDWARDS, Hist. Nat. d. Crust., III, p. 242.

*Conilera cylindracea* BATE and WESTWOOD, Brit. Sess.-Eyed Crust., II, p. 304.—HANSEN, Vidensk. Selsk. Skr. (6), V, 1890, pp. 358-361, pl. IV, figs. 5-5c; pl. V, figs. 1-1d, 1890.

*Habitat*.—Off South Carolina; between the Delta of the Mississippi and Cedar Keys, Florida; also Gulf of Naples; coast of England; coast of France.

*Depth*.—111 to 159 fathoms.

18. EURYDICE Leach.

ANALYTICAL KEY TO THE SPECIES OF EURYDICE.

- a. Terminal segment of body with the posterior margin widely emarginate in the middle, the post-lateral angles obliquely truncate, and each ornamented with two robust spines, the inner one much longer than the outer one. Base of segment with a deep transverse impression in the median line, and a deep lateral impression on either side ..... 38. *Eurydice spinigera* Hansen.
- a'. Terminal segment rounded posteriorly with post-lateral triangular teeth, between which, a space intervening, the posterior margin is denticulate, a spine alternating with each tooth. Base of segment without any transverse depressions, evenly convex ..... 39. *Eurydice convexa* Richardson.

## 38. EURYDICE SPINIGERA Hansen.

*Eurydice spinigera* HANSEN, Vidensk. Selsk. Skr. (6), V, 1890, pp. 367-369, pl. v, figs. 4-4c; pl. vi, figs. 1-1c.

*Habitat*.—West Indies.

## 39. EURYDICE CONVEXA Richardson.

*Eurydice convexa* RICHARDSON, Am. Nat., XXXIV, p. 217, 1900.

Head transverse; anterior margin rounded. Eyes quadrangular. First pair of antennæ short, reaching the middle of the last peduncular joint of the second pair of antennæ, or the posterior margin of the head; flagellum four jointed. Second pair of antennæ long, reaching the anterior margin of the terminal abdominal segment in the female; flagellum eighteen jointed. In the male the second pair of antennæ are equal to the entire length of body, reaching the tip of the terminal segment.

Thoracic segments subequal in length.

Abdomen in female shorter than thorax and head together; abdomen in male about equal to thorax and head.

First five segments equal in length. Terminal segment rounded posteriorly, with post-lateral triangular teeth, between which, a space intervening, the posterior margin is denticulate, a spine alternating with each tooth. The uropoda are short, not reaching the extremity of terminal segment. Both branches are truncate and crenulate on their exterior margins and fringed with long hairs.

Color, light brown, with odd-shaped markings of black.

A number of specimens were taken by the U. S. Fish Commission steamer *Albatross* at Cape San Blas, Florida.

*Type*.—Cat. No. 10049, U.S.N.M.

## 19. BATHYNOMUS Milne-Edwards.

## 40. BATHYNOMUS GIGANTEUS Milne-Edwards.

*Bathynomus giganteus* Milne-Edwards, Ann. N. H. (5) III, 1879, pp. 241-243.

*Habitat*.—West Indies.

*Depth*.—955 fathoms.



FIG. 8.—TERMINAL ABDOMINAL SEGMENT OF EURYDICE CONVEXA.



## Family VI. CORALLANIDÆ.

## 20. CORALLANA Dana.

ANALYTICAL KEY TO THE SPECIES OF CORALLANA.<sup>1</sup>

- a. Eyes moderate or large, some distance apart in the middle at the upper end.
- b. Left mandible, seen in position, with the apical part profoundly trifid. Clypeus and labrum very conspicuous.
- c. Basal article of the first pair of antennæ narrow, without spine. Head of male ornamented with three horn-like tubercles. First segment of body not ornamented with tubercles ..... 41. *Corallana tricornis* Hansen.
- c'. Basal joint of the first pair of antennæ dilated, ornamented with spine at inner exposed angle. Head of male ornamented with four horn-like tubercles. First segment of body ornamented with two tubercles.  
42. *Corallana sexticornis*, new species.
- b'. Left mandible, seen in position, with the apical part obscurely trifid, or forming a single apex. Labium and clypeus partly or very often entirely covered by the mandibles.
- c. Basal joint of the peduncle of the antennulæ moderately narrow, seen from below not prominent above the basal joints of the antennæ. Last segment of the abdomen not ornamented with basal tubercles near the median line..... 43. *Corallana quadricornis* Hansen.
- c'. Basal joint of the peduncle of the antennulæ very much dilated, seen from below so prominent that the basal joints of the antennæ are placed in a transverse cleft moderately deep between the antennulæ and the mandibles. Last segment of the body ornamented with two large basal tubercles situated near the median line.
- d. Fourth and fifth segments of the abdomen a little impressed in the dorsal median line, not ornamented with carinæ or tubercles. Last segment of the abdomen with two spines at the apex... 44. *Corallana subtilis* Hansen.
- d'. Fourth and fifth segments of the abdomen with a deep longitudinal excavation in the dorsal median line, ornamented with many carinæ and tubercles. Last segment of the abdomen with four spines at the apex.  
45. *Corallana antillensis* Hansen.
- a'. Eyes very large, contiguous in the middle of the head.
- b'. Last segment of the abdomen rather short, widely rounded posteriorly and with a median excavation deep and moderately wide.  
46. *Corallana fissicauda* Hansen.
- b'. Last segment of the abdomen rather long, narrowly rounded posteriorly, with no excavation.
- c. Fourth and fifth segments of the abdomen deeply excavate longitudinally in the dorsal median line and ornamented with carinæ. Last segment of the body with an incision in the middle of the side, and ornamented on the dorsal surface with two densely setose areas and with two large basal tubercles situated near the median line.... 47. *Corallana oculata* Hansen.
- c'. Fourth and fifth segments of the body very little impressed in the dorsal median line, ornamented with no carinæ. Last segment of the abdomen entire at the sides, ornamented on the dorsal surface everywhere with very short hairs remotely scattered ..... 48. *Corallana warmingii* Hansen.

<sup>1</sup>This key, with the exception of the new species which is inserted, is taken entirely from Hansen. Vidensk. Selsk. Skr., 6th ser., natur. og math., Afd. V, 1890, pp. 378, 379.



41. *CORALLANA TRICORNIS* Hansen.

*Corallana tricornis* HANSEN, Vidensk. Selsk. Skr. (6), V, 1890, pp. 379-381, pl. vi, figs. 4-4p; pl. vii, figs. 1-1d.

*Habitat*.—Cape Catoche, Yucatan; between Tampa Bay and Dry Tortugas, Florida; between Delta of the Mississippi and Cedar Keys, Florida; St. Thomas, West Indies; St. Croix, West Indies; Jamaica; British Honduras.

*Depth*.—24 to 27 fathoms.

42. *CORALLANA SEXTICORNIS*, new species.

Head in the male ornamented with four spines, forming two transverse series of two spines each, the first being small, the second two very large and long, much longer than the first two and situated behind them. The first antennæ have the basal joint large and dilated, with a spine projecting outward from the inner exposed angle; the flagellum contains eight joints. The second antennæ with a flagellum of nineteen to twenty-one joints reach the posterior margin of the third thoracic segment. The head of the male is excavate above and deeply sunken below the level of the dorsal surface of the body. The head of the female is unornamented, with only a slight indication of two small tubercles in the place where the large spines are situated on the head of the male. The basal joints of the first antennæ of the female are large and dilated, but without the prominent spine characteristic of the male.



FIG. 9.—HEAD AND FIRST THORACIC SEGMENT OF *CORALLANA SEXTICORNIS*.

The first thoracic segment in the male is ornamented with two small tubercles situated close together on the anterior portion. These tubercles are wanting in the female. The posterior segments of the thorax and the abdominal segments are densely tubercular.

The terminal segment of the body is pointed posteriorly, and fringed with hairs. The uropoda are about as long as the terminal segment, the outer branch narrow, the inner branch wide; both are fringed with hairs and armed with a few spines.

One male and a number of females were collected by Henry Hemphill at Key West, Florida.

*Type*.—Cat. No. 13540, U.S.N.M.

43. *CORALLANA QUADRICORNIS* Hansen.

*Corallana quadricornis* HANSEN, Vidensk. Selsk. Skr. (6), V, 1890, p. 382, pl. vii, fig. 3.

*Habitat*.—St. Thomas, West Indies.

44. *CORALLANA SUBTILIS* Hansen.

*Corallana subtilis* HANSEN, Vidensk. Selsk. Skr. (6), V, 1890, pp. 382, 383, pl. VII, figs. 3-3c.

*Habitat*.—St. Thomas, West Indies.

45. *CORALLANA ANTILLENENSIS* Hansen.

*Corallana antillensis* HANSEN, Vidensk. Selsk. Skr. (6), V, 1890, pp. 383, 384, pl. VII, figs. 4-4i.

*Habitat*.—Key West, Florida; St. Thomas, West Indies.

*Depth*.—Shallow water.

46. *CORALLANA FISSICAUDA* Hansen.

*Corallana fissicauda* HANSEN, Vidensk. Selsk. Skr. (6), V, 1890, pp. 385, 386, pl. VII, figs. 5-5d.

*Habitat*.—West Indies.

47. *CORALLANA OCULATA* Hansen.

*Corallana oculata* HANSEN, Vidensk. Selsk. Skr. (6), V, 1890, pp. 386, 387, pl. VII, figs. 6-6b.

*Habitat*.—West Indies.

48. *CORALLANA WARMINGII* Hansen.

*Corallana warmingii* HANSEN, Vidensk. Selsk. Skr. (6), V, 1890, pp. 387, 388, pl. VII, figs. 7-7f.

*Habitat*.—Off Cape Catoche, Yucatan: 17° 47' S. lat., 35° 17' W. long.

*Depth*.—24 fathoms.

## Family VII. ALCIRONIDÆ.

21. *ALCIRONA* Hansen.

Clypeus very large, crescent shaped, the inner margin occupying more than half the outer side of the mandibles. Peduncle of the second pair of antennæ long. First three pairs of legs with the fifth joint not produced on the inner side, the last four pairs with the sixth joint not dilated.

49. *ALCIRONA KREBSII* Hansen.

*Alcirona krebsii* HANSEN, Vidensk. Selsk. Skr. (6), V, 1890, pp. 391, 392, pl. VIII, figs. 1-1q.

*Habitat*.—Off Cape Catoche, Yucatan; St. Thomas, West Indies.

*Depth*.—25 to 28 fathoms.

## Family VIII. ÆGIDÆ.

## ANALYTICAL KEY TO THE GENERA OF ÆGIDÆ.

- a.* Body rather compact. Superior antennæ short, with first two peduncular joints more or less expanded. Epistome large, linguiform, projecting between the bases of inferior antennæ. Maxillipeds with palp composed of five joints. Front separating the whole or a great part of the first article of the first pair of antennæ. Flagellum of first pair of antennæ composed of many articles. Abdomen compact..... 22. *Æga*.
- a'*. Body depressed. Superior antennæ short, with basal joints not expanded. Epistome very small and narrow. Maxillipeds with palp composed of only two joints. Front covering more or less the peduncle of the first pair of antennæ. Flagellum of first pair of antennæ composed of four to six articles. Abdomen relaxed.
- b.* Eyes present. Anterior pairs of legs with propodus more or less expanded, dactylus forming a very large and evenly curved hook. Mandibles with the cutting edge expanded inside to a linguiform lamella; palp well developed, with basal joint much elongated. Abdomen not much narrower than thorax..... 23. *Rocimela*.
- b'*. Eyes wanting. Anterior pairs of legs with propodus not expanded, dactylus abruptly curved in the middle and terminating in a very sharp point. Mandibles with the cutting edge simple, acuminate; palp of moderate length. Abdomen abruptly narrower than the thorax; terminal segment very large ..... 24. *Syscenus*.

## 22. ÆGA Leach.

## ANALYTICAL KEY TO THE SPECIES OF ÆGA.

- a.* Peduncle of the first pair of antennæ plane or concave, joints fitting into each other. Frontal lamina plane or concave.
- b.* Terminal segment of body pointed at extremity.
- c.* Eyes distant..... 50. *Æga psora* (Linnaeus).
- c'*. Eyes contiguous..... 51. *Æga antillensis* Schiøedte and Meinert.
- b'*. Terminal segment of body not pointed at extremity.
- c* Terminal segment posteriorly bisinuate. Surface of segment smooth, without carinæ ..... 52. *Æga carinata* Richardson.
- c'*. Terminal segment posteriorly emarginate or truncate.
- d.* Eyes contiguous. Terminal segment truncate... 53. *Æga crenulata* Lütken.
- d'*. Eyes distant. Terminal segment emarginate... 54. *Æga webbii* (Guérin).
- a'*. Peduncle of the first pair of antennæ well rounded and with joints compressed. Frontal lamina convex or compressed and elevated.
- b.* Eyes contiguous.
- c.* Terminal segment of body whole, entire.
55. *Æga tenuipes* Schiøedte and Meinert.
- c'*. Terminal segment of body not whole or entire.
- d.* Terminal segment dentated ..... 56. *Æga dentata* Schiøedte and Meinert.
- d'*. Terminal segment incised..... 57. *Æga incisa* Schiøedte and Meinert.
- b'*. Eyes not contiguous.
- c.* Terminal segment linguate, incised posteriorly, obscurely sulcate.
58. *Æga arctica* Lütken.
- c'*. Terminal segment subtriangular, apex produced.
- d.* Eyes minute, ovate. Terminal segment lightly carinated.
59. *Æga ventrosa* M. Sars.
- d'*. Eyes large, round, occupying greater part of head. Terminal segment not carinated..... 60. *Æga gracilipes* Hansen.

50. *ÆGA PSORA* (Linnæus).

*Oniscus psora* LINNÆUS, Fauna suecica, 2d ed., 1761; Syst. Nat., 12th ed., I, 1767, p. 1060.—O. FABRICIUS, Fauna Grœnlandica, p. 249, 1780.

*Ega emarginata* LEACH, Trans. Linn. Soc., XI, 1815, p. 370; Dict. Sci. Nat., XII, 1818, p. 349.—DESMAREST, Consid. Crust., 1825, p. 305, pl. XLVII, figs. 4, 5.—MILNE-EDWARDS, Hist. Nat. des Crust., III, 1840, p. 240; Règne Anim., Crust., 1849, pl. IV, fig. 4; pl. LXVII, fig. 1.—GOULD, Rep. Geol. Mass., 1835, p. 549; Invert. Mass., 1841, p. 338.

*Ega psora* KJØYER, Dansk. Vid. Selsk. Afh., VII, 1838, p. 318.

*Ega psora* LILLJEBORG, Öfvers. Vet.-Acad. Förh., 1850, p. 84; 1851, p. 24.—LÜTKEN, Vidensk. Meddel., 1858, pp. 65, 179, 1859; 1860, p. 181 (7), 1861; Crustacea of Greenland, 1875, p. 150.—SCHJØEDTE, Ann. Mag. Nat. Hist. (4), I, 1868, p. 12.—BATE and WESTWOOD, Brit. Sess. Crust., II, 1868, p. 283, fig.—M. SÆRS, Chr. Vid. Selsk. Förh., 1868, 1869, p. 261.—G. O. SÆRS, Hand. Fauna, Crust., 1872, p. 275 (32).—VERRILL, Am. Jour. Sci. (3), V, 1873, p. 16.—SMITH and HARGER, Trans. Conn. Acad., III, 1874, p. 22; Meinert, Crust. Isop. Amph. Dec. Danie, 1877, p. 89.—MIERS, Ann. Mag. Nat. Hist. (4), XIX, 1877, p. 134.—HARGER, Proc. U. S. Nat. Mus., II, 1879, p. 161.

*Ega entaillée* LATREILLE, Règne Anim., IV, 1829, p. 134.

*Ega psora* HARGER, Report U. S. Commissioner of Fish and Fisheries, 1880, Pt. 6, pp. 384-387, pl. x, fig. 64. (See Harger for synonymy.)

*Habitat*.—Off Marthas Vineyard; Georges Bank; Browns Bank; La Have Bank; Gulf of Maine; Western Bank; Sable Island Bank; between St. Peters Bank and Banquereau; Newfoundland; Gulf of St. Lawrence; Labrador; Holsteinborg, Greenland; in Davis Straits; also Iceland; British Isles; North Sea; Finmark; Spitzbergen.

*Depth*.—30 to 218 fathoms.

51. *ÆGA ANTILLENIS* Schjødte and Meinert.

*Ega antillensis* SCHJØEDTE and MEINERT, Naturhistorisk Tidsskrift., XII, 1879-80, pp. 361, 362, pl. VIII, figs. 10-13.

*Habitat*.—Cuba; West Indies; off Cozumel.

*Depth*.—163 to 231 fathoms.

52. *ÆGA ECARINATA* Richardson.

*Ega ecarinata* RICHARDSON, Proc. Biol. Soc. Washington, XII, 1898, pp. 39, 40.

*Habitat*.—Off Little Bahama Bank; between delta of the Mississippi and Cedar Keys, Florida.

*Depth*.—88 to 338 fathoms.

53. *ÆGA CRENULATA* Lütken.

*Ega crenulata* LÜTKEN, Vid. Medd. Naturh. Foren. i Kjøbenhavn f. 1858, p. 70, pl. A, figs. 4, 5.—SCHJØEDTE and MEINERT, Nat. Tidsskr. (3), XII, p. 343, pl. VII, figs. 6-9.—HANSEN, Vid. Medd. Naturh. Foren. i Kjøbenhavn f. 1887, p. 183.

*Habitat*.—Ritenbenk and Umanek, West Greenland; also Iceland, Finmark, coast of Norway.

54. *ÆGA WEBBII* (Guérin).

*Pterelas webbii* GUÉRIN, Mag. Zool., Cl. VII, 1836, pl. xx, figs. 1a-c.

*Æga webbii* SCHIÆDTE and MEINERT, Naturh. Tidssk., XII, 1879-80, pp. 347, 348, pl. x, figs. 1-4.

?*Æga webbii* HARGER, Bull. Mus. Comp. Zool., Harvard College, 1883, XI, No. 4, p. 95.

*Habitat*.—Off Fernandina, Florida; lat. N.  $31^{\circ} 57'$ , long. W.  $78^{\circ} 18' 35''$  (Harger); also Cape of Good Hope; Portugal.

*Depth*.—333 fathoms.

55. *ÆGA TENUIPES* Schiædte and Meinert.

*Æga tenuipes* SCHIÆDTE and MEINERT, Naturhistorisk Tidsskrift, XII, 1879-80, p. 371, pl. ix, fig. 4-6.

*Habitat*.—Cuba.

56. *ÆGA DENTATA* Schiædte and Meinert.

*Æga dentata* SCHIÆDTE and MEINERT, Naturhistorisk Tidsskrift, XII, 1879-80, pp. 372, 373, pl. x, fig. 11-12.

*Habitat*.—Cuba.

57. *ÆGA INCISA* Schiædte and Meinert.

*Æga incisa* SCHIÆDTE and MEINERT, Naturhistorisk Tidsskrift, XII, 1879-80, pp. 373, 374, pl. x, fig. 13-15.—HARGER, Bull. Mus. Comp. Zool., Harvard College, X, 1883, No. 4, p. 96, pl. iii, fig. 1.

*Habitat*.—Off Fernandina, Florida; off Georgia; off St. Augustine, Florida;  $31^{\circ} 57'$  N. lat.,  $78^{\circ} 18' 35''$  W. long.

*Depth*.—263 to 440 fathoms.

58. *ÆGA ARCTICA* Lütken.

*Æga arctica* LÜTKEN, Vid. Medd. Nat. For., 1858, p. 71, pl. 1 A, figs. 1-3.—SCHIÆDTE and MEINERT, Naturhistorisk Tidsskrift, XII, 1879-80, pp. 374, 375.

*Habitat*.—Umanek and Hundeøerne, near Egedesminde, Greenland; also Iceland and Finmark.

59. *ÆGA VENTROSA* M. Sars.

*Æga ventrosa* M. SARS, Chr. Vid. Selsk. Forh., 1848, p. 156.

*Æga lorenii* BOVALLIUS, Bihang Sv. Ak. Handl., XI, No. 16, pp. 3-6, pl. 1, figs. 1-10.

*Ægiochus ventrosus* (M. SARS) BOVALLIUS, Bihang. Sv. Ak. Handl., XI, No. 16, pp. 8-9.

*Ægiochus nordenskiöldii* BOVALLIUS, Bihang Sv. Vet. Akad. Handl., X, 1885, No. 9, p. 5, pl. 1-XI.

*Æga nordenskiöldii* (BOVALLIUS) HANSEN, Vidensk. Meddel. naturh. Foren. i Kjøebh., 1887, pp. 184-187.

*Æga ventrosa* G. O. SARS, Crust. of Norway, II, 1897, Pts. 3, 4, p. 64, pl. xxvi, fig. 3.

*Habitat*.—Greenland; also coast of Norway; Finland.

*Depth*.—120 fathoms.

60. *ÆGA GRACILIPES* Hansen.

*Æga gracilipes* HANSEN, Isopoden, Cumaccen und Stomatopoden der Plankton Exp., 1895, pp. 15, 16, pl. 1, fig. 6-6c.

*Habitat*.—Gulf of Mexico; North Atlantic, 59° 0' N. lat., 8.5' W. long.

*Depth*.—730 fathoms; 1,524 meters (Hansen).

23. *ROCINELA* Leach.ANALYTICAL KEY TO THE SPECIES OF *ROCINELA*.

a. Eyes contiguous. Head produced into process in front.

61. *Rocinela oculata* Harger.

a'. Eyes not contiguous.

b. Flagellum of second pair of antennæ with fourteen to sixteen joints.

c. Eyes close together. Head without median excavation, not bicarinated.

62. *Rocinela insularis* Schiødtte and Meinert.

c'. Eyes widely separated. Propodus of prehensile legs with two to four spines. First thoracic segment normal.

d. Frontal margin of head produced.

e. Head tuberculated. . . . . 63. *Rocinela cubensis* Richardson.

e'. Head not tuberculated. With frontal excavation. Front bicarinated.

64. *Rocinela dumerilii* (Lucas).

d'. Frontal margin of head not produced. Terminal segment of body lingu-ate; both branches of the uropoda crenulate on their external margins.

e. Spots present on both sides of the fourth thoracic segment.

65. *Rocinela maculata* Schiødtte and Meinert.

e'. Spots wanting on fourth thoracic segment. Spots wanting on fourth and fifth abdominal segments and terminal segment.

66. *Rocinela americana* Schiødtte and Meinert.

b'. Flagellum of second pair of antennæ with ten or eleven joints. No tubercles developed on body. Terminal segment of body ornamented with a pair of narrow semilunar bands, separated by a longitudinal stripe.

67. *Rocinela signata* Schiødtte and Meinert.

61. *ROCINELA OCULATA* Harger.

*Rocinela oculata* HARGER, Bull. Mus. Comp. Zool., Harvard College, IX, No. 4, pp. 97-99, pl. III, fig. 2-2a; pl. IV, fig. 1.

*Habitat*.—32° 18' 20" W. lat., 78° 43' W. long.

*Depth*.—252 fathoms.

62. *ROCINELA INSULARIS* Schiødtte and Meinert.

*Rocinela insularis* SCHIØDTTE and MEINERT, Naturhistorisk Tidsskrift, 1879-80, XII, pp. 390, 391, pl. XII, fig. 1-3.

*Habitat*.—West Indies; between delta of the Mississippi and Cedar Keys, Florida; off Fernandina, Florida.

*Depth*.—227 to 273 fathoms.

63. *ROCINELA CUBENSIS* Richardson.

*Rocinela cubensis* RICHARDSON, Proc. Amer. Phil. Soc., XXXVII, 1898, pp. 13, 14.

*Habitat*.—Off Habana.

*Depth*.—143 fathoms.



64. *ROCINELA DUMERILII* (Lucas).

*Acherusia dumerilii* LUCAS, Expl. Sc. Algér., Zool. 1, p. 79, pl. VIII, fig. 3.

*Acherusia complanata* GRUBE, Ins. Lussin Meeresf., p. 76.

*Rocinela dumerilii* SCHIÆDTE and MEINERT, Naturhistorisk Tidsskrift, XII, pp. 391-393, pl. XII, fig. 4-6.

*Habitat*.—Off Habana, Cuba; also Mediterranean Sea; Adriatic Sea; in Atlantic Ocean,  $36^{\circ} 46' 7''$  lat. N.,  $14^{\circ} 7' 2''$  long. W.

*Depth*.—230 fathoms.

65. *ROCINELA MACULATA* Schiædte and Meinert.

*Rocinela maculata* SCHIÆDTE and MEINERT, Naturhistorisk Tidsskrift (3), XII, 1889, p. 393, pl. XII, figs. 10-12.—BOVALLIUS, Bihang t. Kgl. Sv. Vet. Akad. Handling., X, No. 11, p. 10, pl. II, figs. 18-23.—HANSEN, Vidensk. Meddel. naturh. Foren. i Kjoebh., 1887, p. 187.

*Habitat*.—Greenland; Vladivostock; east Asia.

66. *ROCINELA AMERICANA* Schiædte and Meinert.

*Rocinela americana* SCHIÆDTE and MEINERT, Naturhistorisk Tidsskrift, XVI, 1879-80, pp. 394, 395, pl. XII, figs. 16-18.—HARGER, Bull. Mus. Comp. Zool., Harvard College, XI, 1883, No. 4, pp. 98, 99, pl. IV, figs. 3, 3a, 4; pl. IV, figs. 2, 2a.

*Habitat*.—Trenton, Maine;  $40^{\circ} 2' 54''$  N. lat.,  $70^{\circ} 23' 40''$  W. long.;  $40^{\circ}$  N. lat.,  $70^{\circ} 57'$  W. long.;  $39^{\circ} 57'$  N. lat.,  $70^{\circ} 57' 30''$  W. long.;  $37^{\circ} 25'$  N. lat.,  $74^{\circ} 18'$  W. long.;  $40^{\circ} 2'$  N. lat.,  $70^{\circ} 37' 30''$  W. long.

*Depth*.—85 to 157 fathoms.

67. *ROCINELA SIGNATA* Schiædte and Meinert.

*Rocinela signata* SCHIÆDTE and MEINERT, Naturhistorisk Tidsskrift, XII, 1879-80, pp. 399-401, pl. XIII, fig. 3-6.

*Habitat*.—West Indies; shores of Central America; St. Croix Island; St. Bartholomew Island; Marco, No Name Key, and between Delta of the Mississippi and Cedar Keys, Florida.

*Depth*.—Low water to 26 fathoms.

24. *SYSCENUS* Harger.68. *SYSCENUS INFELIX* Harger.

*Syscenus infelix* HARGER, Report U. S. Fish Comm., Pt. 6, pp. 387-390, 1880; Bull. Mus. Comp. Zool., Harvard College, XI, 1883, No. 4, pp. 100-102, pl. III, figs. 5-5a, pl. IV, figs. 3-3h.

*Habitat*.— $41^{\circ} 34' 30''$  N. lat.,  $65^{\circ} 54' 30''$  W. long.;  $40^{\circ} 11' 40''$  N. lat.,  $68^{\circ} 22'$  W. long.; Marthas Vineyard; south of Long Island; also all along the Atlantic coast as far south as Delaware Bay.

*Depth*.—231 to 435 fathoms.



## Family IX. CYMOTHOIDÆ.

ANALYTICAL KEY TO THE GENERA OF CYMOTHOIDÆ.<sup>1</sup>

- a.* Head not at all immersed or set in the first thoracic segment.
- b.* Uropoda and terminal segment ciliated. Eyes large, conspicuous. . . . . 25. *Egathoa*.
- b'*. Uropoda and terminal segment not ciliated. Eyes small.
- c.* Posterior angles of first segment of body prominent or produced, very often acute; posterior angles of the following segments increasing gradually in length, the first of these very often scarcely prominent, the posterior ones very often produced, abruptly longer than the first. Epimera of the first segments extending beyond the posterior angles of the segment; posterior ones produced, acute . . . . . 26. *Nerocita*.
- c'*. Posterior angles of first six segments of body scarcely or not at all prominent, those of seventh segment produced. Epimera of first segments very often almost or quite reaching, or not reaching by a short distance, the posterior angle of the segment.
- d.* Body compact. Head not constricted at base. Uropoda very often more or less longer than terminal segment. Legs gradually increasing in length. . . . . 27. *Anilocera*.
- d'*. Body relaxed. Head constricted at the base. Uropoda much shorter than terminal segment. Legs gradually and much longer successively; seventh pair abruptly very much so . . . . . 28. *Olenicera*.
- a'*. Head more or less immersed or set in first thoracic segment.
- b.* First pair of antennæ contiguous at the base.
- c.* Epimera of the first pair with a carina produced in the form of a spoon in female. Ungulæ very long, unequal in length; those of the third pair longest, abruptly longer than second pair. Terminal segment transverse . . . . . 29. *Ceratothoa*.
- c'*. Epimera of the first pair not produced in female. Ungulæ mostly very short, very rarely long, equal in length. Terminal segment subtriangular, semicircular, often bilobed . . . . . 30. *Meimertia*.
- b'*. First pair of antennæ manifestly distant at the base.
- c.* Abdomen manifestly separated from the thorax, abruptly narrower than thorax . . . . . 31. *Cymothoa*.
- c'*. Abdomen continuous with thorax, not narrower than thorax.
- d.* Body hunched or compressed . . . . . 32. *Agarna*.
- d'*. Body evenly convex, not hunched.
- e.* Abdomen very little or scarcely immersed. Segments of thorax either equal in length or the first segment abruptly longer and the last segment abruptly shorter than the others . . . . . 33. *Livonca*.
- e'*. Abdomen very deeply and profoundly immersed. First segment of the thorax manifestly longer than the second; six posterior segments gradually decreasing a little in length . . . . . 34. *Irona*.

## 25. ÆGATHOA Dana.

## ANALYTICAL KEY TO THE SPECIES OF ÆGATHOA.

- a.* Frontal margin of head produced anteriorly in a median linguinate projection. . . . . 69. *Egathoa linguifrons*, new species.
- a'*. Frontal margin of head not produced anteriorly in a median projection.
- b.* Surface of head smooth, evenly convex. Second pair of antennæ ten-jointed. First thoracic segment longer than any of the succeeding segments, which are of equal length . . . . . 70. *Egathoa boliginæ* Harger.

<sup>1</sup>The definitions of genera are taken from Schiedte and Meinert's Monograph of the Cymothoideæ, Naturhist. Tidssk., XIII, XIV, 1881-1884.

b. Surface of head with central portion sharply raised above the lateral portion, which is deeply excavate just in front of the eyes. Second pair of antennæ eight-jointed. First three thoracic segments subequal; last four subequal and somewhat shorter than first three. . . . . 71. *Egathoa medialis* Richardson.

69. *ÆGATHOA LINGUIFRONS*, new species.

Body narrow, elongate; abdomen not narrower than thorax.

Head with sides rounded. Frontal margin abruptly produced anteriorly into a median linguatè projection, with apex rounded; posterior part of projection forming a raised surface sharply defined on anterior part of head, extending back to eyes. Eyes large, oval, occupying two-thirds the width of head. First pair of antennæ nine-jointed. Second pair more slender, equal in length to first pair, and ten-jointed.

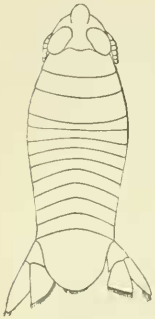


FIG. 10.—*ÆGATHOA LINGUIFRONS*.

First three thoracic segments long, second one shortest; last four segments short, of nearly equal length. All the abdominal segments distinct: first five equal in length, terminal segment rounded at apex. Uropoda longer than terminal segment. Inner branch obliquely truncate at apex and shorter than outer branch, which is obtusely pointed.

Both branches, as well as the posterior margin of the terminal segment, are fringed with hairs.

Legs similar in structure, with curved dactyli.

Color, light brown, with scattered black dots.

A single specimen was obtained at Trinidad.

*Type*.—Cat. No. 23903, U.S.N.M.

70. *ÆGATHOA LOLIGINEA* Harger.

? *Cymothoa oculata* SAY, Jour. Ac. Nat. Sci. Phil., I, 1818, pp. 398, 399.

*Egathoa loliginea* HARGER, Am. Jour. Sci., XV, 1898, p. 376; Proc. U. S. Nat. Mus., II., 1879, p. 161. Report U. S. Commissioner of Fish and Fisheries, 1880, Pt. 6, pp. 393, 394, pl. x, fig. 66.

*Habitat*.—Savin Rock, near New Haven, Connecticut; Fort Macon, North Carolina; St. Johns River, Florida (Say).

*Cymothoa oculata* Say is probably identical with *Egathoa loliginea* Harger. In the description given by Say, the characters which point to this identification are "body elongate oval; head trilobate behind, middle lobe smallest; abdomen, segments not shorter than terminal thoracic ones; tail, terminal segment shorter than the four preceding segments conjunctly. Lateral line of body forming a perfectly uninterrupted curve; head regularly rounded before, broader than long; eyes large, conspicuous, facets regularly hexagonal; terminal segment hardly broader than preceding segment, rounded at tip, edge ciliate, nearly equal to length of the four preceding joints conjunctly. Uropoda ciliated."

Say's species is clearly not a *Cymothoa*, and can be placed with no other genus of the *Cymothoidae* than *Ægathoa*, because of the ciliated uropoda and ciliated terminal abdominal segment.

Although nothing is said of the antennæ in the meager description, the species can hardly be placed among the *Ægidæ*, because of the long abdominal segments which are equal in length to the posterior thoracic segments, the head trilobate behind, regularly rounded before, and terminal segment hardly broader than preceding segment.

71. *ÆGATHOA MEDIALIS* Richardson.

*Ægathoa medialis* RICHARDSON, Am. Nat., XXXIV, 1900, p. 220.

Body narrow, elongate; abdomen not narrower than thorax.

Head, with anterior margin, broadly rounded in front; central portion sharply raised above lateral portion, which is deeply excavate just in front of eyes. Eyes large, occupying two-thirds the width of the head. First pair of antennæ eight-jointed; second pair more slender, equal in length, and nine-jointed.

First three segments of thorax subequal, last four subequal and somewhat shorter than first three. First five abdominal segments equal in length. Terminal segment rounded posteriorly. Uropoda longer than terminal segment; branches unequal. Outer branch the longer; inner branch obliquely truncate. Legs similar in structure, with curved daetyli. Color, light brown, densely covered with black spots. Single specimen from Barren Island, Chesapeake Bay.

*Depth*.—3 to 25 fathoms.

*Type*.—Cat. No. 23904, U.S.N.M.

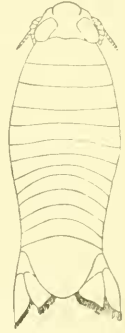


FIG. 11.—*ÆGATHOA MEDIALIS*.

26. *NEROCILA* Leach.

ANALYTICAL KEY TO THE SPECIES OF *NEROCILA*.

*a*. Head rounded like a circle in front; eyes indistinct, obscure. Terminal segment cordate, acuminate, lightly carinated. Uropoda scarcely longer than the terminal segment; inner branch much shorter and wider than outer branch, acuminate; outer branch narrow, scythe-shaped.

72. *Nerocila acuminata* Schiødte and Meinert.

*a'*. Head subtruncate in front. Eyes distinct, black. Terminal segment regularly rounded, not carinated. Uropoda much longer than terminal segment; inner branch narrowly oval, obliquely truncate, and shorter than outer branch; outer branch narrowly ovate or lanceolate..... 73. *Nerocila munda* Harger.

72. *NEROCILA ACUMINATA* Schiødte and Meinert.

*Nerocila acuminata* SCHIØDTE AND MEINERT, Naturhistorisk Tidsskrift, XIII, 1881-1883, pp. 48-50, pl. III, figs. 5-6.

*Habitat*.—Atlantic Ocean and Gulf of Mexico: St. Anna, Mexico; Louisiana; Pensacola and St. Marys River, Florida; Fort Macon, North Carolina; New Point, Virginia.

73. *NEROCILA MUNDA* Harger.

*Nerocila munda* HARGER, Report U. S. Commissioner of Fish and Fisheries, 1874, Pt. 1, p. 571 (277); Proc. U. S. Nat. Mus., II, 1879, p. 161.—VERRILL, Report U. S. Commissioner of Fish and Fisheries, 1874, Pt. 1, p. 459 (165).—HARGER, Report U. S. Commissioner of Fish and Fisheries, 1880, Pt. 6, pp. 392, 393, pl. x, fig. 65.

*Habitat*.—Vineyard Sound.

27. *ANILOCRA*<sup>1</sup> Leach.

ANALYTICAL KEY TO THE SPECIES OF ANILOCRA.

a. Head produced, with sides sinuate and roundly truncate in front. Terminal abdominal segment varying in width, either equally as long as wide, or manifestly longer than wide. Uropoda much shorter than caudal segment; inner branch scarcely much longer and much wider than outer branch.

74. *Anilocra laticauda* Milne-Edwards.

a'. Head rounded as a circle in front. Terminal abdominal segment wider than long. Uropoda manifestly longer than terminal segment; inner branch much shorter and scarcely wider than outer branch.

75. *Anilocra plebeia* Schiödte and Meinert.

74. *ANILOCRA LATICAUDA* Milne-Edwards.

*Anilocra laticauda* MILNE-EDWARDS, Hist. Nat. Crust., III, p. 259.

*Anilocra mexicana* SAUSSURE, Rev. Mag. Zool., 1857, p. 505.

*Anilocra leachii* (KRÖYER), SCHIÖDTE, Natur. Tidsskr., IV, 1866, p. 205, pl. XI, figs. 2a-2g.

*Anilocra laticauda* SCHIÖDTE and MEINERT, Naturhistorisk Tidsskrift, XIII, 1881-1883, pp. 126-131, pl. IX, figs. 1-3.

*Habitat*.—From Maryland to Straits of Magellan: Maryland; Key West; St. Anna, Mexico; Cozumel, Yucatan; Habana, Cuba; St. Thomas; St. Croix; St. Bartholomew; Rio de Janeiro, Brazil; Sandy Point, in Straits of Magellan; Porlamar, Margarita Island, Venezuela.

75. *ANILOCRA PLEBEIA* Schiödte and Meinert.

*Anilocra plebeia* SCHIÖDTE and MEINERT, Naturhistorisk Tidsskrift, XIII, 1881-1883, pp. 145, 146, pl. X, fig. 3.

*Habitat*.—Shores of Costa Rica, Central America.

28. *OLENCIRA* Leach.76. *OLENCIRA PRÆGUSTATOR* (Latrobe).

*Oniscus prægustator* LATROBE, Trans. Amer. Philos. Soc., V, p. 77, pl. I.

*Cymothoa prægustator* SAY, Jour. Ac. Nat. Sci. Phila., I, 1818, pp. 395, 396.

*Olenkira lamarekii* LEACH, Diet. Sc. Nat., XII, p. 351.—DESMAREST, Consid. Gen. Crust., p. 307.—MILNE-EDWARDS, Hist. Nat. Crust., III, p. 264.

*Olenkira prægustator* SCHIÖDTE and MEINERT, Naturh. Tidsskrift, XIII, 1881-1883, pp. 152-154, pl. X, figs. 6-9.

<sup>1</sup>The species described by Nicholson in his Hist. Nat. de St. Dominique, pp. 343, 344, pl. VII, fig. 2, under the name of *Pou de Sarde*, and which he speaks of as "le véritable *Pediculus marinus* de Rondelet et Maregrave," probably belongs to

*Habitat*.—Potomac River; York Spit, Virginia; Dividing Cove; St. Georges Island, Maryland; Fort Monroe, Head of Cockrell Creek, Hampton Creek, Lower Chesapeake Bay; Cape Charles, Virginia; off Great Wicomico; Pensacola and St. Marys River, Florida.

## 29. CERATOTHOA Dana.

### 77. CERATOTHOA LINEARIS Dana.

*Ceratothoa linearis* DANA, U. S. Explor. Exped. Crust., II, p. 752, pl. t., fig. 1 a-1 d.

? *Cymothoa impressa* SAY, Jour. Ac. Nat. Sci. Phil., I, 1818, p. 397.

*Ceratothoa exoceti* CUNNINGHAM, Trans. Linn. Soc. London, XXVII, p. 499, pl. LIX, fig. 5.

*Glossobius linearis* SCHÜDTE and MEINERT, Naturhistorisk Tidsskrift, XIII, 1881-1883, pp. 301-308, pl. XII, fig. 1-2.

*Ceratothoa linearis* STEBBING, Hist. of Crust., 1893, p. 354.

*Habitat*.—From 42° to 21° N. lat.; 8° to 10° N. lat., 40° to 50° W. long.; 34° N. lat., 51° W. long.; Rio Janeiro; in the Gulf Stream everywhere; Cape May, New Jersey (Say).

## 30. MEINERTIA Stebbing.

### 78. MEINERTIA TRANSVERSA Richardson.

*Meinertia transversa* Richardson, Am. Nat., XXXIV, 1900, p. 221.

Head very little immersed in first thoracic segment, large, subtriangular, anterior margin pointed with sides slightly sinuate. Eyes situated at extreme post-lateral margins, almost obscure. First pair of antennae, with joints dilated, issuing close together, eight articulate. Second pair of antennae slender, extending a little beyond posterior margin of first thoracic segment; fourteen jointed.

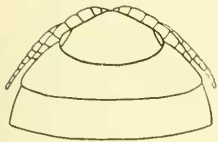


FIG. 12.—HEAD OF MEINERTIA TRANSVERSA.

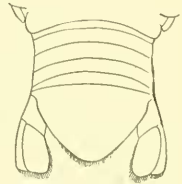


FIG. 13.—ABDOMEN OF MEINERTIA TRANSVERSA.

Thoracic segments subequal in length.

Abdomen not at all immersed. All the segments visible and equal in width and length. Terminal segment subtriangular with apex round, impressed at base, equal in length to first five segments taken together. Uropoda a little longer than apex of terminal segment, branches similar in shape, oar-like, and of equal length.

Legs increasing in length from first to seventh pair.

Color yellowish brown.

the genus *Ambloera*. Schüedte and Meinert have placed *Pediculus marinus* Rondelet in the synonymy of *Ambloera physodes* Linnaeus, and following their authority, and Nicholson's observation on the close resemblance of his species with *Pediculus marinus*, I would refer *Pou de Sarde* to this genus. Whether or not it is identical with *A. laticauda*, common in the West Indies, I am unable to determine from the description.

One specimen from between the delta of the Mississippi and Cedar Keys, Florida, collected by the U. S. Fish Commission steamer *Albatross*.

*Type*.—No. 9728, U.S.N.M.

### 31. CYMOTHOA Fabricius.

#### ANALYTICAL KEY TO THE SPECIES OF CYMOTHOA.

- a*. Terminal segment lanceolate ..... 79. *Cymothoa lanceolata* Say.  
*a'*. Terminal segment transverse; posterior margin widely sinuated or bilobed.  
*b*. Anterior angles of the first thoracic segment short, acute; sides of the segment a little constricted. Inner branch of the uropoda much shorter than outer branch..... 80. *Cymothoa excisa* Perty.  
*b'*. Anterior angles of the first thoracic segment very large, equaling or surpassing the front of the head, rounded; sides of the segment flexuous. Inner branch of the uropoda manifestly longer than outer branch.  
 81. *Cymothoa œstrum* (Linnaeus).

#### 79. CYMOTHOA LANCEOLATA Say.

*Cymothoa lanceolata* SAY, Jour. Acad. Nat. Sci. Phila., 1, 1818, pp. 397, 398.

*Habitat*.—Cumberland Island, Georgia.

#### 80. CYMOTHOA EXCISA Perty.

*Cymothoa excisa* PERTY, Del Amin., p. 211.

*Cymothoa parasita* SAUSSURE, Mém. Soc. Phys. Genève, XIV, Pt. 2, p. 485, pl. v, fig. 44.

*Crustaceum quoddam animalculum Acarapitamban verans* MARCGRAV, Hist. pisc. IV, p. 155.

*Cymothoa excisa* SCHIEDTE and MEINERT, Naturhistorisk Tidsskrift, XIV, 1883-84, pp. 238-244, pl. vi, figs. 11-16. (See Schiedte and Meinert for synonymy.)

*Habitat*.—Massachusetts; Florida Reefs; Charlestown Harbor, South Carolina; Bahamas; Biloxi, Mississippi; Cuba; Maranhao; Rio Janeiro.

#### 81. CYMOTHOA ŒSTRUM (Linnaeus).

*Oniscus œstrum* LINNÆUS, Syst. Nat., 10th ed., I, p. 636, No. 2; Fauna Su., 2d ed., p. 499, no. 2053; Syst. Nat., 12th ed., I, Pt. 2, p. 1059, No. 2.

*Asellus œstrum* OLIVIER, Encycl. méthod. IV, p. 253.

*Cymothoa œstrum* FABRICIUS, Entom. Syst. II, p. 505, No. 6.—LEACH, Trans. Linn. Soc., XI, p. 372; Diet. Sc. Nat., XII, p. 352.—DESMAREST, Consid. gén. Crust., p. 309, pl. XLVII, figs. 6-7.

*Cymothoa dufresnei* LEACH, Diet. Sc. Nat., XII, p. 352.

*Cymothoa immersa* SAY, Journ. Ac. Nat. Sc. Phila., I, 1818, pp. 399, 400.

*Cymothoa œstrum* SCHIEDTE and MEINERT, Naturhistorisk Tidsskrift, XIV, 1883-84, pp. 271-279, pl. VIII, figs. 5-13.

*Habitat*.—Caribbean Sea and Gulf of Mexico to shores of Virginia; Swan Island; St. Bartholomew; St. Christopher; Jamaica; Guadeloupe; St. Anna, Mexico; Key West, Florida; Curacao, Venezuela.



## 32. AGARNA Schiøedte and Meinert.

## 82. AGARNA CARINATA Schiøedte and Meinert.

*Agarna carinata* SCHIØEDTE and MEINERT, Naturhistorisk Tidsskrift, XIV, 1883-84, pp. 329-334, pl. XIII, figs. 1-3.

*Habitat*.—St. Croix Island, West Indies; Key West, Florida.

## 33. LIVONECA Leach.

## ANALYTICAL KEY TO THE SPECIES OF LIVONECA.

- a.* Uropoda much longer than caudal segment; inner branch narrow, obtuse, much shorter than outer branch. Epimera of last two thoracic segments not longer than segments ..... 83. *Livoneca redmanni* Leach.
- a'*. Uropoda hardly surpassing the caudal segment; both branches equal in length, inner one oval. Epimera of last two thoracic segments longer than segments. 84. *Livoneca ovalis* (Say).

## 83. LIVONECA REDMANNI Leach.

*Livoneca redmanni* LEACH, Dict. Hist. Nat., XII, p. 352.—DESMAREST, Cons. Gén. Crust., p. 308.—MILNE-EDWARDS, Hist. Nat. Crust., III, p. 261; Cuv. Règn. Anim. Ill., pl. LXVI, figs. 4, 4a.

*Livoneca desmarestii* LEACH, Dict. Hist. Nat., XII, p. 352.—DESMAREST, Cons. Gén. Crust., p. 308.—MILNE-EDWARDS, Hist. Nat. Crust., III, p. 261; Cuv. Règn. Anim. Ill., pl. LXVI, figs. 3, 3a-3e.

*Livoneca redmanni* SCHIØEDTE and MEINERT, Naturhistorisk Tidsskrift, XIV, 1883-84, p. 353-358, pl. XIV, figs. 6-12.

*Habitat*.—New York; Charleston, South Carolina; Mobile, Alabama; Biloxi, Mississippi; Cuba; St. Christopher; Jamaica; Bahia, and Rio Janeiro, Brazil.

## 84. LIVONECA OVALIS (Say).

*Cymothoa ovalis* SAY, Jour. Acad. Nat. Sci. Phila., 1, 1818, p. 394.

*Cymothoa triloba* DEKAY, Nat. Hist. N. Y., Pt. 1, p. 46, pl. x, fig. 40, 1843.

(?) *Cymothoa olivacea* DEKAY, Nat. Hist., N. Y., Pt. 1, p. 47, pl. x, figs. 41, 41a.

*Livoneca ovalis* WHITE, Cat. Crust. Brit. Mus., 1847, p. 109.—HARGER, Report U. S. Commissioner of Fish and Fisheries, 1874, Pt. 1, p. 572 (278), pl. vi, fig. 29; Proc. U. S. Nat. Mus., II, 1879, p. 162; Report U. S. Commissioner of Fish and Fisheries, 1880, Pt. 6, pp. 395, 396, pl. XI, fig. 67.

*Habitat*.—New Haven; Thimble Islands; Long Island Sound; Woods Hole, Massachusetts; Vineyard Sound; New York; Patapasco River; Charleston, South Carolina; Pensacola, Florida; St. Marys River, Florida.

## 34. IRONA Schiøedte and Meinert.

## 85. IRONA NANA Schiøedte and Meinert.

*Irona nana* SCHIØEDTE and MEINERT, Naturhistorisk Tidsskrift, XIV, 1883-84, pp. 390-395, pl. XVII, figs. 6-11.

*Habitat*.—Caribbean Sea and Atlantic Ocean; St. John; St. Bartholomew; Rio Janeiro.

## Family X. LIMNORIIDÆ.

## 35. LIMNORIA Leach.

## 36. LIMNORIA LIGNORUM (Rathke).

*Cymothoa lignorum* RATHKE, Skrivt. of Naturh. Selsk., V, 1799, p. 101, pl. III, fig. 14 (White).

*Limnoria tenebrans* LEACH, Ed. Encycl., VII, 1813, p. 433 (Am. ed., p. 273); Trans. Linn. Soc., XI, 1815, p. 37; Dict. Sci. Nat., XII, 1818, p. 353.—DESMAREST, Consid. Crust., 1825, p. 312.—LATREILLE, Règne Anim., IV, 1829, p. 135.—EDWARDS, Annot. de Lamarck; V, 1838, p. 276; Hist. Nat. des Crust., III, 1840, p. 145; Règne Anim., Crust., 1849, p. 197, pl. LXVII, fig. 5.—GOULD, Invert. Mass., 1840, pp. 338, 354.—VERRILL, Proc. Am. Assoc., 1873 (1874), p. 367.

*Limnoria lignorum* WHITE, Pop. Hist. Brit. Crust., 1857, p. 227, pl. XII, fig. 5.—BATE, Rep. Brit. Assoc., 1860 (1861), p. 225.—BATE and WESTWOOD, Brit. Sess. Crust., II, 1868, p. 351.—NORMAN, Rep. Brit. Assoc., 1868 (1869) p. 288.—VERRILL, Am. Journ. Sci., VII, 1874, pp. 133, 135; Proc. Am. Assoc., 1873 (1874), p. 371; Report U. S. Com. of Fish and Fisheries, 1874, Pt. 1, p. 379 (85).—HARGER, Report U. S. Fish Com. 1874, Pt. 1, p. 571 (277) pl. VI, fig. 25; Proc. U. S. Nat. Mus., II, 1879, p. 161.—STEBBING, Trans. Devon. Assoc., 1874, p. 8; Ann. Mag. Nat. Hist., 4th ser., XVII, 1876, p. 79.—SMITH, Proc. U. S. Nat. Mus., II, 1879 (1880), p. 232, fig. 2.

*Limnoria ucinata* HELLER, Verh. k. k. Zool. Bot. Ges. Wien, XVI, 1866, p. 734.

*Limnoria lignorum* HARGER, Report U. S. Fish Commissioner, 1880, Pt. 6, pp. 373, 376 (see Harger for synonymy).

*Limnoria californica* HEWSTON, Proc. Cal. Acad. Sci., V, 1874, p. 24 (nomen nudum).

*Habitat.*—From Florida to Halifax, and Gulf of St. Lawrence; also coast of Great Britain; North Sea; Adriatic Sea; Pacific Ocean; California; coast of Norway.

## Family XI. SPHEROMIDÆ.

## ANALYTICAL KEY TO THE GENERA OF SPHEROMIDÆ.

- a.* Outer branch of the uropoda small, almost rudimentary..... 36. *Cassidina*.  
*a'*. Outer branch of the uropoda not rudimentary.  
*b.* Both external and internal branches of the uropoda projecting and exposed; outer branch capable of folding under inner.  
*c.* Terminal segment of the abdomen entire ..... 37. *Sphæroma*.  
*c'*. Terminal segment excavated at its extremity..... 38. *Dynamene*.  
*b'*. Only external branch of the uropoda projecting and exposed; outer branch incapable of folding under inner.  
*c.* All the thoracic segments of equal length. Penultimate abdominal segment in male generally produced in spine. Terminal segment excavate with or without median lobe ..... 39. *Cilicxa*.  
*c'*. Sixth segment of the thorax much enlarged, and produced at the center far backward, covering the shorter seventh segment for the most part. Terminal segment excavate ..... 40. *Nesa*.

36. CASSIDINA Milne Edwards.

87. CASSIDINA LUNIFRONS Richardson.

*Cassidina lunifrons* RICHARDSON, Am. Nat., XXXIV, 1900, p. 222.

Body oval, surface smooth.

Head broader anteriorly than posteriorly, the antero-lateral angles being produced in a lateral direction and forming very acute angles. The eyes are situated at the post-lateral corners of the head. The first pair of antennæ reach two or three joints beyond the antero-lateral angle of the head; flagellum five-jointed. The second pair almost reach the posterior margin of the first thoracic segment; flagellum contains about eight joints, the first four being large, the last four small and setose.

The first thoracic segment is well fitted to the head, so that the elliptical outline of the body is preserved. The segments are subequal, with straight lateral margins. The epimera are hardly distinct from the segments.

The first segment of the abdomen is short. The terminal segment is subtriangular, with apex truncate. The inner branch of the uropoda is pointed at its extremity, and reaches the tip of the abdomen. The outer branch is rudimentary, about one-fourth as long as the inner branch.

Color, brown.

Specimens were found at Great Egg Harbor, New Jersey, by William Stimpson.

Type.—Cat. No. 4402, U.S.N.M.

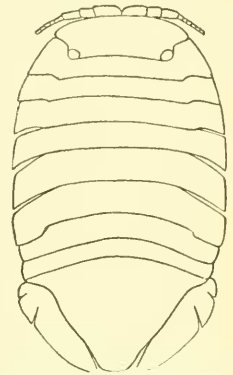


FIG. 14.—CASSIDINA LUNIFRONS.

37. SPHÆROMA Latreille.

ANALYTICAL KEY TO THE SPECIES OF SPILEROMA.

- a. Outer branch of the uropoda denticulate on its external margin.
  - b. Abdomen without tubercules..... 88. *Sphæroma quadridentatum* Say.
  - b'. Abdomen with tubercules..... 89. *Sphæroma destructor* Richardson.
- a'. Outer branch of the uropoda smooth on its external margin.
  - 90. *Sphæroma yucatanum*, new species.

88. SPHÆROMA QUADRIDENTATUM Say.

*Sphæroma quadridentatum* SAY, Jour. Acad. Nat. Sci. Phila., 1, 1818, p. 400.—HARGER, Am. Jour. Sci., V, 1873, p. 314; Report U. S. Commissioner of Fish and Fisheries, 1874, Pt. 1, p. 569 (275), pl. v, fig. 21; Proc. U. S. Nat. Mus., II, 1879, p. 161.—VERRILL, Report U. S. Commissioner of Fish and Fisheries, 1874, Pt. 1, p. 315 (21).—HARGER, Report U. S. Commissioner of Fish and Fisheries, 1880, Pt. 6, pp. 368-370, pl. ix, fig. 53.

*Habitat*.—Provincetown, Massachusetts; Cape Charles City, Virginia; St. Catherine's Island, Georgia; East Florida; Key West, Florida.

*Depth*.—Surface to one-half fathom.

## 89. SPHÆROMA DESTRUCTOR Richardson.

*Sphæroma destructor* RICHARDSON, Proc. Biol. Soc. Wash., XI, p. 105, 1897.

*Habitat*.—St. John's River, Palatka, Florida.

## 90. SPHÆROMA YUCATANUM, new species.

Head transverse; eyes situated at the extreme post-lateral angles. First pair of antennæ short, reaching the posterior margin of the head; flagellum six-jointed. Second pair of antennæ, with a flagellum containing ten joints, extends to the posterior margin of the second thoracic segment.



FIG. 15.—ABDOMEN OF SPHÆROMA YUCATANUM.

First thoracic segment longer than any of the following segments, its post-lateral angles produced. The remaining segments of equal length; epimera produced laterally into acute processes.

First abdominal segment with suture lines. Last segment terminating posteriorly in an obtuse point, on either side of which is a small tooth. The base of the segment bears three low tubercles, one on the median line and one on either side. The uropoda are short, not reaching the post-lateral teeth. Both branches are equal in length and width, the outer branch pointed, the inner branch truncate.

Surface of body smooth; color bluish.

One specimen was taken at Cape Catoche, Yucatan.

*Type*.—Cat. No. 23905, U.S.N.M.

## 38. DYNAMENE Leach.

## ANALYTICAL KEY TO THE SPECIES OF DYNAMENE.

- a*. Terminal abdominal segment with only a slight rounded excavation at its extremity. Extremity of terminal segment and outer posterior angles of uropoda rounded, not produced..... 91. *Dynamene bermudensis* (Ives).  
*a'*. Terminal abdominal segment with a deep V shaped excavation at its extremity. Extremity of terminal segment and outer posterior angles of uropoda acutely produced..... 92. *Dynamene angulata*, new species.

## 91. DYNAMENE BERMUDENSIS (Ives).

*Cynodocea bermudensis* IVES, Proc. Acad. Nat. Sci. Phila., 1891, p. 194.

*Habitat*.—Bermudas; Punta Rassa, Florida; Cedar Keys, Florida; Key West, Florida; No Name Key, Florida; Sarasota Bay, Florida; Beaufort, North Carolina.

## 92. DYNAMENE ANGULATA, new species.

Surface of body smooth; color yellow.

Head large, with small median point on its anterior margin. First pair of antennæ reach the posterior margin of the second thoracic segment; flagellum composed of nine joints. Second pair of antennæ

reach the posterior margin of the fourth thoracic segment: flagellum composed of thirteen joints.

Thoracic segments sub-equal in length, the first being a little longer than any of the others. The epimera are broad and short, with acute lateral angulations.

The first abdominal segment bears suture lines indicative of coalesced segments. The terminal segment is sub-triangular, with the extremity produced and deeply excavate, the excavation being v shaped. The branches of the uropoda are similar in shape, the outer one being somewhat longer; they are obliquely truncated and do not quite reach the tip of the abdomen.

Specimens were found by Mr. Henry Hemphill at No Name Key, Florida.

*Type*.—Cat. No. 23906, U.S.N.M.

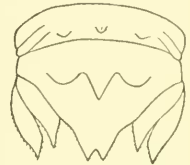


FIG. 16.—ABDOMEN OF DYNAMENE ANGULATA.

### 39. CILICÆA Leach.

#### ANALYTICAL KEY TO THE SPECIES OF CILICÆA.

- a. Terminal abdominal segment with small sinus without teeth or median lobe.
  - 93. *Cilicæa carinata* Richardson.
- a'. Terminal abdominal segment with sinus in which are placed teeth or median lobe.
  - b. Sinus with four teeth..... 94. *Cilicæa caudata* (Say).
  - b'. Sinus with one median lobe, projecting much beyond the lateral angles and triangulate at its extremity..... 95. *Cilicæa linguicauda*, new species.

#### 93. CILICÆA CARINATA Richardson.

*Cilicæa carinata* RICHARDSON, Am. Nat., XXXIV, 1900, p. 224.

Head with a median projection on the anterior margin, produced forward in the form of a large tubercle. Eyes colorless. First pair of antennæ reach the posterior margin of the head; flagellum eight-jointed. Second pair of antennæ reach the posterior margin of the first thoracic segment.

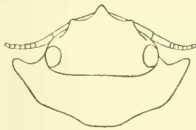


FIG. 17.—HEAD OF CILICÆA CARINATA.

The segments of the thorax are roughly granulated. A transverse median ridge or elevation appears on each of the segments, giving the dorsum, from a lateral view, a very rugged appearance. The epimera are rough and are drawn out laterally in very acute angles.



FIG. 18.—LATERAL VIEW OF CILICÆA CARINATA.

The abdomen is composed of two segments, the first segment being formed of several coalesced segments, as indicated by two suture lines. In the center of this segment are two longitudinal ridges, placed obliquely, so as almost to meet anteriorly and to spread apart at their

other extremity. This segment projects down over the last segment at either side. The last segment bears a deep excavation at its posterior



FIG. 19.—ABDOMEN OF *CILICÆA CARINATA*.

extremity, around and above which is a carinated ridge extending entirely around the whole of the posterior half of the segment. Two small longitudinal ridges are in the center of the segment. The inner branch of the uropoda is very short, not reaching the extremity of the abdomen by some distance; it is quadrangular in shape, with sides nearly parallel, and obliquely truncated at the end. The outer

branch of the uropoda is long, curved, and pointed at the end, resembling a hook somewhat.

The color is a light yellow. In appearance the little isopod is very rough and rugged looking.

There is but one specimen, which was found off the coast of Georgia.

*Depth*.—440 fathoms.

*Type*.—Cat. No. 23907, U.S.N.M.

#### 94. *CILICÆA CAUDATA* (Say).

*Næsa caudata* SAY, Jour. Acad. Nat. Sci., Phila., 1, 1818, p. 482.—MILNE-EDWARDS, Hist. Nat. des Crustacés, III, p. 219.

*Cymodocea caudata* IVES, Proc. Acad. Nat. Sci., Phila., 1891, p. 188, pl. vi, figs. 11-14.

*Ciliæa caudata* RICHARDSON, Proc. U. S. Nat. Museum, XXI, p. 841 (footnote).

*Habitat*.—Egg Harbor, New Jersey; Beaufort, North Carolina; No Name Key, Florida; between Salt Pond Key and Stock Island; Key West, Sugarloaf Key, northwest end St. Martin's Reef, Sarasota Bay, Florida; off Progreso, Yucatan; Bermudas.

*Depth*.—Found on surface.

#### 95. *CILICÆA LINGUICAUDA*, new species.

Head subtriangular in shape; frontal margin with a small median point; eyes post-laterally situated. The first pair of antennæ reach the posterior margin of the first thoracic segment; the second pair touch the fourth segment.

The first segment of the thorax is a little longer than any of the others, which are similar in size. The epimera are distinct from the segments, and are produced into acute points, with the exception of the last, which has the epimera quite rounded.

The abdomen is composed of two segments, the first of which gives indication of three coalesced segments, and has a small tooth on each side on its post-lateral margin. The last segment is swollen anteriorly, and bears three low tubercles on this portion. The extremity



of the abdomen is marked by a sinus, which is almost completely filled by a single large tooth, which is posteriorly triangular and extends beyond the lateral teeth formed by the sinus. This central tooth bears a small, pointed tubercle near its base. The uropoda are slightly incurved, and are somewhat longer than the abdomen.



FIG. 20.—ABDOMEN OF CILICEA LINGUI-CAUDA.

The color is a dull yellow.

The lower part of each thoracic segment is densely granulated, as well as the whole surface of the abdomen. The edges of the segments and the uropoda are fringed with hairs.

*Habitat.*—Cape Catoche, Yucatan.

*Type.*—Cat. No. 23908, U.S.N.M.

40. NÆSA Leach.

It is not probable that the two following species belong to the genus *Næsa*, but being unable from lack of specimens and from the character of the description to determine where they do belong, I have retained them for the present with *Næsa* where Say placed them.

96. NÆSA DEPRESSA Say.

*Næsa depressa* SAY, Jour. Ac. Nat. Sci. Phila., I, 1818, pp. 483, 484.

*Habitat.*—Egg Harbor, New Jersey.

*Depth.*—Found on surface.

97. NÆSA OVALIS Say.

*Næsa ovalis* SAY, Jour. Ac. Nat. Sci. Phila., I, 1818, pp. 484, 485.

*Habitat.*—St. Johns River, Florida.

*Depth.*—Found on surface.

III. VALVIFERA OR IDOTEOIDEA.

ANALYTICAL KEY TO THE FAMILIES OF VALVIFERA.

a. Body more or less broad, depressed. Legs usually nearly alike, but first three pairs sometimes with propodus dilated and dactylus reflexed.

Family XII. IDOTEIDÆ (p. 537).

a'. Body narrow, scarcely depressed. Four anterior pairs of legs unlike three posterior pairs, and not ambulatory, nor strictly prehensile, directed forward, slender, ciliated, with terminal joint minute; last three pairs stouter, ambulatory, with terminal joint bifid ..... Family XIII. ARCTURIDÆ (p. 545).

Family XII. IDOTEIDÆ.

ANALYTICAL KEY TO THE GENERA OF IDOTEIDÆ.

a. Sides of head emarginate or cleft and laterally produced beyond eyes, which are situated upon its dorsal surface. Three anterior pairs of legs, with penultimate joint or propodus dilated, and forming, with reflexible dactylus, a prehensile hand. All the epimera from the second to seventh segments distinctly defined ..... 41. *Chiridotea*.

- a'*. Sides of head in a dorsal view entire and not laterally produced. Eyes lateral. Legs all ambulatory; three anterior pairs with penultimate joint not or not much dilated.
- b*. Flagellum of second pair of antennæ well developed and multiarticulate.
- c*. Palpus of maxillipeds four-jointed. Epimera of all the segments well developed and evident in a dorsal view. Abdomen consisting of three segments with lateral sutures indicative of another partially coalescent segment.
42. *Idotea*.
- c'*. Palpus of maxillipeds three-jointed. All the epimera coalesced and perfectly united with the segments. Abdomen consisting of one segment, uniarticulate..... 43. *Spyridotea*.
- b'*. Flagellum of second pair of antennæ not multiarticulate.
- c*. Flagellum of second pair of antennæ obsolete. Second pair of antennæ much longer than first pair.
- d*. Legs subequal. Antennæ geniculate. Palp of maxillipeds four-jointed. Body angulate..... 44. *Erichsonella*.
- d'*. Third and fourth pairs of legs generally markedly shorter than anterior pairs. Fifth, sixth, and seventh pairs gradually increasing in length. Antennæ not geniculate. Palp of maxillipeds two-jointed. Body slender, linear, smooth..... 45. *Cleantis*.
- c'*. Flagellum of second pair of antennæ rudimentary. Second pair of antennæ a little longer than first pair..... 46. *Edotea*.

#### 41. CHIRIDOTEA Harger.

##### ANALYTICAL KEY TO THE SPECIES OF CHIRIDOTEA.

- a*. Species large, elongate-ovate. Outer ramus of uropoda (opercular valves) minute. Joints of peduncle of antennæ greatly dilated; flagellum 7-8 jointed; antero-cervical lobes prominent..... 98. *Chiridotea sabini* (Krøyer).
- a'*. Species small, orbiculate-ovate. Outer ramus of uropoda at least half as long as inner.
- b*. Antennæ little longer than antennules; flagellum seven-jointed. Eyes inconspicuous. Antennules longer than peduncle of antennæ.
99. *Chiridotea cæca* (Say).
- b'*. Antennæ twice as long as antennules; flagellum twelve-jointed. Eyes usually distinct. Antennules do not surpass peduncle of antennæ.
100. *Chiridotea tuftsi* (Stimpson).

#### 98. CHIRIDOTEA SABINI (Krøyer).

*Idotea sabini* KRØYER, Nat. Tidsskr. (2), II, p. 401.—REINHARDT, Fortegnelse over Grönlands Krebsdyr, 1857, p. 34.—LÜTKEN, List of Crust. of Greenland in Arctic Manual, 1875, p. 149.—SARS, Arch. f. Math. og Naturvidensk., II, 1877, p. 350.

*Chiridotea megalura* G. O. SARS, Archiv. f. Math. og Naturvidenskab., IV, 1880, p. 432.

*Glyptonotus sabini* MIERS, Jour. Linn. Soc. Lond., XVI, 1883, p. 15-17, pl. 1, fig. 3-5.—AXEL OULIN, Bidrag till kännedomen om Malakostrakfaunan i Baffin Bay och Smith Sound, 1895, p. 13-14.—RICHARDSON, Proc. U. S. Nat. Mus., XXI, 1899, p. 844.

*Chiridotea sabini* STEBBING, Ann. Mag. Nat. Hist. (7), V, 1900, p. 14.

*Habitat*.—Davis Straits; Repulse Bay, North America; Cape Dudley Digges; Cape Faraday; 73° 43' N. lat., 78° 48' W. long.; 71° 57' N.

lat.,  $73^{\circ} 56'$  W. long.;  $71^{\circ} 42'$  N. lat.,  $73^{\circ}$  W. long.:  $66^{\circ} 33'$  N. lat.,  $61^{\circ} 50'$  W. long.; circumpolar.

*Depth*.—Surface to 25 fathoms.

#### 99. CHIRIDOTEA CÆCA (Say).

*Idotea cæca* SAY, Jour. Acad. Nat. Sci. Phil., I, 1818, p. 424.—MILNE-EDWARDS, Hist. nat. des Crust., III, 1840, p. 131.—GÉRIN, Iconog., Crust., 1843, p. 35.—VERRILL, Report U. S. Commissioner of Fish and Fisheries, 1874, Pt. 1.—HARGER, Report U. S. Commissioner of Fish and Fisheries, 1874, Pt. 1, p. 569 (275), pl. v, fig. 22.

*Chiridotea cæca* HARGER, Am. Jour. Sci., XV, 1878, p. 374; Proc. U. S. Nat. Mus., II, 1879, p. 159; Report U. S. Commissioner of Fish and Fisheries, 1880, Pt. 6, pp. 338-340, pl. iv, figs. 16-19.

*Glyptonotus cæcus* MIERS, Jour. Linn. Soc. Lond., XVI, 1883, pp. 17, 18.

*Habitat*.—Florida; New Haven, Connecticut; Long Island Sound; Vineyard Sound; Nantucket, Provincetown, Nahant, Massachusetts; Halifax, Nova Scotia.

*Depth*.—Found on surface.

#### 100. CHIRIDOTEA TUFTSII (Stimpson).

*Idotea tuftsii* STIMPSON, Marine Inv. Grand Manan, 1853, p. 39.—VERRILL, Proc. Am. Assoc., 1873, p. 362, 1874; Report U. S. Commissioner of Fish and Fisheries, 1874, Pt. 1, p. 340 (46).—HARGER, Report U. S. Commissioner of Fish and Fisheries, 1874, Pt. 1, p. 569 (275).

*Chiridotea tuftsii* HARGER, Am. Jour. Sci., XV, 1878, p. 374; Proc. U. S. Nat. Mus., II, 1879, p. 159; Report U. S. Commissioner of Fish and Fisheries, 1880, Pt. 6, pp. 340, 341, pls. iv, figs. 20-23.

*Glyptonotus tuftsii* MIERS, Jour. Linn. Soc. Lond., 1883, XVI, pp. 18, 19.

*Habitat*.—Bay of Fundy; Long Island Sound; Massachusetts Bay; Casco Bay, Maine; Princes Cove, Eastport; Halifax, Nova Scotia.

*Depth*.—Surface to 25 fathoms.

#### 42. IDOTEA Fabricius.

##### ANALYTICAL KEY TO THE SPECIES OF IDOTEA.

- a. Terminal segment toothed or acute at its extremity.
- b. Body smooth, not tuberculate or rugose. Terminal segment with sides straight and slightly convergent to distal extremity, which is tridentate, with the postero-lateral teeth rounded and much less prominent than median tooth. Epimeral sutures of all the segments extend quite across the segments. Body striped, especially on males, with a median dorsal stripe of a lighter color than rest of body..... 101. *Idotea marina* (Linnaeus).
- b'. Body rough and tuberculate. Terminal segment rounded off at posterior extremity to median terminal tooth, which is somewhat produced. Epimeral sutures of second and third thoracic segments do not entirely cross the segments, but allow the rounded postero-lateral lobes of these segments to form a part of the lateral margin. Body not striped longitudinally in median dorsal line with lighter color..... 102. *Idotea phosphorea* Harger.
- a'. Terminal segment subtruncate at its extremity..... 103. *Idotea metallica* Bose.

## 101. IDOTEA MARINA (Linnæus)

- Oniscus marina* LINNÆUS, Fauna Suecica, 1761, p. 500; Syst. Nat., 12th ed., 1766, p. 1060.—FABRICIUS, Mantissa Ins., I, 1787, p. 241.
- Oniscus tridens* SCOPOLI, Entom. Carniolica, 1763, p. 415.
- Idotea entomon* PENNANT, Brit. Zool., IV, 1777, p. 38, pl. xviii, fig. 5.—LEACH, Edinb. Encycl., VII, p. 404, pl. ccxxi, fig. 7; Trans. Linn. Soc., XI, 1815, p. 364.
- Oniscus bathicus* PALLAS, Spic. Zool., (9) 1772, p. 67, pl. iv, fig. 6.
- Asellus marinus* OLIVIER, Encycl. Méth., IV, 1789, p. 254.
- Cymothoa marina* FABRICIUS, Ent. Syst., II, 1793, p. 506.
- Cymothoa acuminata* FABRICIUS, Ent. Syst., II, 1793, p. 508.
- Idotea marina* FABRICIUS, Ent. Syst. Suppl., 1798, p. 303.
- Idotea acuminata* FABRICIUS, Ent. Syst. Suppl., 1798, p. 303.—LATREILLE, Hist. Nat. Crust. & Ins., VI, 1803, p. 369.
- Stenosoma irrorata* SAY, Jour. Acad. Nat. Sci. Phila., I, 1818, p. 423.—GOULD, Rep. Invert. Mass., 1841, p. 338.
- Idotea tricuspidata* DESMAREST, Dict. des Sci. Nat., XXVIII, 1823, p. 373, pl. xlvi, fig. 11; Consid. Crust., 1825, p. 289, pl. xlvi, fig. 11.—ROUX, Cr. de la Méditerranée, 1830, pl. xxxix, figs. 11, 12.—GOULD, Rep. Geol. Mass., 11th ed., 1835, p. 549.—MILNE-EDWARDS, Hist. Nat. Crust., III, 1840, p. 129.—LUCAS, Anim. artic. in Expl. Sci. Algér., Cr., I, 1849, p. 60.—LILLEBORG, Oefvers. Vet.-Ak. Förh., 1852, (9) p. 11.—M. SARS, Förh. Vidensk.-Selsk. Christ., 1859, p. 151.—NORMAN, Nat. Hist. Trans. Northumb., I, 1867, p. 25; Rep. Brit. Assoc., 1868, p. 197.—BATE and WESTWOOD, Brit. Sessile-eyed Crust., II, 1868, p. 379, fig.—STEBBING, Jour. Linn. Soc., Zool., XII, 1874, p. 148.
- Idotea basteri* AUDOUIN, Explic. Planches in Savigny's Égypte, pl. xii, fig. 6.—ROUX, Cr. de la Méditerranée, 1830, pl. xxix, figs. 1-10.
- Idotea variegata*, ROUX, Crust. de la Médit., 1830, pl. xxx, figs. 1-9.
- Idotea (Stenosoma) pusella* EICHWALD, Reise auf dem caspisch. Meere, I, p. 138.
- Idotea irrorata* MILNE-EDWARDS, Hist. Nat. Crust., III, 1840, p. 132.—STIMPSON, Marine Inv. Grand Manan, 1853, p. 39.—HARGER, Report U. S. Fish Com., Pt. 1, 1874, p. 569, pl. v, fig. 23; Proc. U. S. Nat. Mus., II, 1879, p. 160; Report U. S. Fish Com., 1880, Pt. 6, p. 343, pl. v, figs. 24-26.—VERRILL, Am. Jour. Sci., VII, 1874, pp. 131, 135; Proc. Am. Assoc., 1874, pp. 369, 371, 373; Rep. U. S. Fish Com., 1874, Pt. 1, p. 316.
- Idotea tricuspis* DEKAY, Zool. New York Fauna, Cr., 1844, p. 42, pl. ix, fig. 35.
- Idotea brevicauda* DANA, Am. Jour. Sci., VIII, 1849, p. 426; U. S. Expl. Exp., XIV, Cr. II, 1853, p. 702, pl. xlvi, fig. 4.
- Idotea slabberii* BOS, Bijl. Cr. Hedrioph Nederl., 1874, pp. 35, 69, pl. i, figs. 12, 13.
- Idotea baltica* MEINERT, Nat. Tidsskr., XI, 1877, p. 81.
- Idotea marina* MIERS, Jour. Linn. Soc. Lond., XVI, 1883, pp. 25-31 (see Miers for synonymy).

*Habitat*.—Nova Scotia and Gulf of St. Lawrence to North Carolina; Bermuda; also Mediterranean, Black, and Caspian seas; west coast of Europe to Great Britain; shores of the Netherlands; in German Ocean and Baltic; on Scandinavian and Finland coasts; South America, at Desterro and Rio Janeiro, Brazil; New Zealand; Red Sea; Java.

*Depth*.—Surface to 119 fathoms.

## 102. IDOTEA PHOSPHOREA Harger.

*Idotea phosphorea* HARGER, Report U. S. Commissioner of Fish and Fisheries, 1874, p. 569 (275), Pt. 1; Proc. U. S. Nat. Mus., 1879, II, p. 160.—VERILL, Am. Jour. Sci., 1874, pp. 43, 45, 131; Proc. Amer. Assoc., 1873, pp. 362, 367, 369, 1874; Report U. S. Commissioner of Fish and Fisheries, 1874, Pt. 1, p. 316 (22).—WHITEAVES, Am. Jour. Sci., VII, 1874, p. 218.—HARGER, Report U. S. Commissioner of Fish and Fisheries, 1880, Pt. 6, pp. 347, 348, pl. v, figs. 27-29.

*Habitat*.—Entire coast of New England to Halifax, Nova Scotia, and Gulf of St. Lawrence.

*Depth*.—Surface to 18 fathoms.

## 103. IDOTEA METALLICA Bosc.

*Idotea metallica* Bosc, Hist. Nat. Crust., II, 1802, p. 179, pl. xv, fig. 6.—LATREILLE, Hist. Nat. Cr. et Ins., VI, 1803, p. 373.

*Idotea atrata* COSTA, Fauna del R. Napoli, Cr., 1838, pl. xi, fig. 3.

*Idotea rugosa* MILNE-EDWARDS, Hist. Nat. Crust., III, 1840, p. 131.

*Idotea peloponesiaca* ROUX, Cr. de la Méditerranée, 1830, pl. xxx, figs. 10, 12.

*Idotea robusta* KRØYER, Naturhistorisk. Tidsskrift, (2) II, 1846, p. 108; Voy. en Scand., Crust., pl. xxvi, fig. 3.—REINHARDT, Førtæg. over Grønlands Krebsdyr, 1857, p. 35.—STIMPSON, Proc. Ac. Nat. Sci. Phila., 1863, p. 133.—VERRILL, Am. Jour. Sci., II, 1871, p. 360; Rep. U. S. Fish Com., 1874, Pt. 1, p. 439.—HARGER, Rep. U. S. Fish Com., 1874, p. 569, pl. v, fig. 24; Proc. U. S. Nat. Mus., II, 1879, p. 160; Rep. U. S. Fish Com., 1880, Pt. 6, p. 349, pl. vi, figs. 30-32.

*Idotea compacta* WHITE, List. Crust. Brit. Mus., 1847, p. 95.

*Idotea algirica* LUCAS, Anim. artic. in Expl. Sci. Algérie, I, Cr., 1849, p. 61, pl. vi, fig. 2.

*Idotea metallica* MIERS, Jour. Linn. Soc. Lond., XVI, 1883, p. 35-38 (see Miers for synonymy).

*Habitat*.—Off Maryland; Chesapeake Bay; North Carolina; Newport, Rhode Island; Long Island; Nantucket; Vineyard Sound; Woods Hole, Massachusetts; Georges Banks; Jeffries Bank; near Isles of Shoals; Halifax, Nova Scotia; La Have Bank; also Mediterranean Sea; between Greenland and Iceland; between Montevideo and Straits of Magellan; New South Wales; Borneo; off Cape Negro; Latitude Cove, Patagonia.

*Depth*.—Surface to 91 fathoms.

## 43. SYNIDOTEA Harger.

## ANALYTICAL KEY TO THE SPECIES OF SYNIDOTEA.

a. Terminal abdominal segment pointed at its extremity.

104. *Synidotea nodulosa* (Krøyer).

a'. Terminal abdominal segment emarginate or notched at its extremity.

b. Outlines of thorax subparallel. . . . . 105. *Synidotea marmorata* (Packard).

b'. Outlines of thorax strongly arcuate . . . . . 106. *Synidotea bicuspida* (Owen).

## 104. SYNIDOTEA NODULOSA (Krøyer).

*Idotea nodulosa* KRØYER, Naturhist. Tidsskrift (2), II, 1846, p. 100; Voy. en Scand., Crust., 1849, pl. xxvi, fig. 2.—REINHARDT, Grønlands Krebsdyr, 1857, p. 34.—LÜTKEN, Crust. Greenland, 1875, p. 150.

*Synidotea nodulosa* HARGER, Am. Jour. Sci., XV, 1878, p. 374; Proc. U. S. Nat. Mus., II, 1879, p. 160; Report U. S. Commissioner of Fish and Fisheries, 1880, Pt. 6, pp. 351, 352, pl. vi, figs. 33-35.

*Habitat*.—Southern Greenland; Halifax; Georges Banks; Arctic Seas and southward on Pacific coast as far as British Columbia.

*Depth*.—16 to 119 fathoms.

105. *SYNIDOTEA MARMORATA* (Packard).

*Idotea marmorata* PACKARD, Mem. Bos. Soc. Nat. Hist., I, 1867, p. 296, pl. viii, fig. 6.—WHITEAVES, Canad. Nat., 1875, p. 262.

*Idotea bicuspida* STREETS and KINGSLEY, Bull. Essex Inst., IX, 1877, p. 108.

(?) *Idotea rugulosa* BUCHHOLZ, Zweite Deutsche Nordpolarf., II, 1874, p. 285.

*Synidotea bicuspida* HARGER, Proc. U. S. Nat. Mus., II, 1879, p. 160, Rep. U. S. Fish Com., 1880, p. 352, Pt. 6.

*Idotea bicuspida* MIERS, Jour. Linn. Soc. London, XVI, 1883, p. 66.

*Synidotea marmorata* BENEDICT, Proc. Acad. Nat. Sci. Phila., 1897, p. 392.

*Habitat*.—Labrador; Grand Bank.

*Depth*.—36 to 129 fathoms.

106. *SYNIDOTEA BICUSPIDA* (Owen).

*Idotea bicuspida* OWEN, Crustacea of the Blossom, 1839, p. 92, pl. xxvii, fig. 6.—STREETS and KINGSLEY, Proc. Essex Inst., IX, 1877, p. 108.

*Idotea marmorata* PACKARD, Mem. Bos. Soc. Nat. Hist., I, 1867, p. 296, pl. viii, fig. 6.

*Idotea pulchra* LOCKINGTON, Proc. Cal. Acad. Sci., VII, 1877, p. 45.

*Synidotea bicuspida* HARGER, Proc. U. S. Nat. Mus., 1879, II, p. 160; Report U. S. Commissioner of Fish and Fisheries, 1880, Pt. 6, pp. 352-354.—AXEL OMLIN, Bidrag till Kannedomen om Malakostrakfaunan i Baffin Bay och Smith Sound, 1895, p. 14.

*Habitat*.—Grand Bank; Sloop Harbor, Kynetarbuck Bay, Labrador; 66° 33' N. lat., 61° 50' W. long.; Arctic Seas; west coast of Alaska, north of Bering Straits; Kara Sea.

*Depth*.—5 to 13½ fathoms.

44. *ERICHSONELLA*<sup>1</sup> Benedict, new name.

ANALYTICAL KEY TO THE SPECIES OF *ERICHSONELLA*.

- a. Surface of body smooth throughout. Outline of body regular. Antennulae short. Caudal segment shows but slight traces of a lateral tooth near its base on either side ..... 107. *Erichsonella attenuata* (Harger).
- a'. Surface of body tuberculated. Outline of body serrate. Antennulae long. Caudal segment with a prominent lateral tooth near its base on either side.
- b. Large bifid tubercle on center of head. Median longitudinal row of tubercles on each thoracic segment..... 108. *Erichsonella filiformis* (Say).
- b'. Large tridentate spine on center of head. Median longitudinal row of tubercles on each thoracic segment, and a longitudinal row of tubercles on either side of median row on first four thoracic segments.

109. *Erichsonella floridana* Benedict, new species.

<sup>1</sup>Proposed by Dr. James E. Benedict for the preoccupied *Erichsonia*.



## 107. ERICHSONELLA ATTENUATA (Harger).

*Erichsonia attenuata* HARGER, Report U. S. Commissioner of Fish and Fisheries, 1874, Pt. 1, p. 570 (276), pl. vi, fig. 27; Proc. U. S. Nat. Mus., II, 1879, p. 160.—VERRILL, Report U. S. Commissioner of Fish and Fisheries, 1874, Pt. 1, p. 370 (76).—HARGER, Report U. S. Commissioner of Fish and Fisheries, 1880, Pt. 6, pp. 356, 357, pls. vi, vii, figs. 36–37.

*Habitat.*—Great Egg Harbor, New Jersey; Noank, Connecticut.

## 108. ERICHSONELLA FILIFORMIS (Say).

*Stenosoma filiformis* SAY, Jour. Acad. Nat. Sci., I, 1818, p. 424.—MILNE-EDWARDS, Hist. Nat. des Crust., III, 1840, p. 134.

*Idotea filiformis* WHITE, List Crust. Brit. Mus., 1847, p. 95.

*Erichsonia filiformis* HARGER, Report U. S. Commissioner of Fish and Fisheries, 1874, Pt. 1, p. 570 (276), pl. vi, fig. 26; Proc. U. S. Nat. Mus., 1879, II, p. 160.—VERRILL, Report U. S. Commissioner of Fish and Fisheries, 1874, Pt. 1, p. 316 (22).—HARGER, Report U. S. Commissioner of Fish and Fisheries, 1880, Pt. 6, pp. 355, 356, pl. vii, figs. 38–41.

*Habitat.*—Great Egg Harbor, New Jersey; Long Island Sound; Vineyard Sound, Massachusetts; Punta Rassa, Florida.

*Depth.*—4½ to 7 fathoms.

109. ERICHSONELLA FLORIDANA Benedict, new species.<sup>1</sup>

The body is long and narrow, broadest at the third and fourth segments. The head is wider than long. A rectangular projection extends forward in front of the eyes. The frontal margin between the projections is arcuate. The eyes are lateral, slightly projecting. The antennæ are geniculate. The three distal segments are approximately the same length. The terminal segment or flagellum is hairy.

A large tridentate spine occupies the center of the head. The main portion of the spine has a longitudinally compressed apex, the lateral portions arise at a distance from the base and point divergently forward, falling short of the elevation of the main portion.

The third and fourth segments of the thorax are the longest and widest: the posterior segments are successively shorter. The lateral margins of the segments are concave, making the segmental angles acute. The epimera are exposed in the concave margins. On the posterior margin of each segment at the median line is a single spine pointing backward. On the first four segments there are single lateral

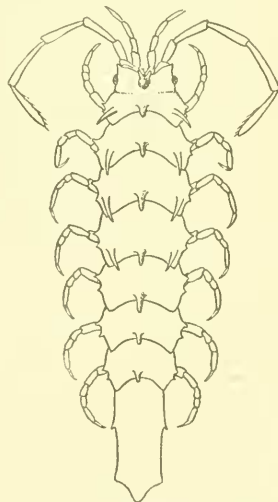


FIG. 21.—ERICHSONELLA FLORIDANA.

<sup>1</sup>The description that follows is from Dr. Benedict's manuscript.

spines on the transverse median line similar in size, shape, and direction to those of the dorsal line.

The pleon consists of a single elongated segment with sub-parallel sides ending in a blunt apex. On each side of the pleon are two widely separated angular projections.

*Habitat*.—Key West, Florida, among algae below low tide.

*Type*.—Cat. No. 15786, U.S.N.M.

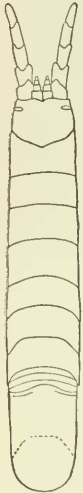


FIG. 22.—CLEANTIS PLANICAUDA.

45. CLEANTIS Dana.

110. CLEANTIS PLANICAUDA Benedict.

*Cleantis planicauda* BENEDICT, in Richardson, Proc. U. S. Nat. Mus., XXI, 1899, p. 851, footnote.

*Habitat*.—Pensacola, Florida.

46. EDOTEA Guérin-Ménéville.

ANALYTICAL KEY TO THE SPECIES OF EDOTEA.

*a*. Anterior angles of head produced into knob-like projections. Lateral angles of thoracic segments produced into knob-like projections. Four tubercles situated on the dorsal surface of the head..... 111. *Edotea acuta* Richardson.

*a'*. Anterior angles of head not produced into knob-like projections. Lateral angles of thoracic segments not produced into knob-like projections. Two tubercles situated on dorsal surface of head.

*b*. Lateral margins of thorax nearly even. Anterior angles of head not salient. Lateral margins of terminal segment scarcely indented.

*b'*. Lateral margins of thorax angulated and salient. Anterior angles of head salient. Lateral margins of terminal segment indented, abdomen more elongated.... 113. *Edotea montosa* (Stimpson).

112. *Edotea triloba* (Say).

111. EDOTEA ACUTA Richardson.

*Edotea acuta* RICHARDSON, Am. Nat., XXXIV, 1900, p. 228.

Head with its antero-lateral angles produced in knob-like projections. Four tubercles situated on surface of head, two on the anterior part, and two on the posterior part. First pair of antennae not reaching beyond the lateral projections. Second pair twice as long as lateral projections, and carrying a rudimentary flagellum.

Thoracic segments subequal. Sides of all the segments produced into knob-like projections.

Terminal abdominal segment with a transverse depression or groove on either side of which the lateral margin is indented. Apex of segment produced as in *Edotea montosa*.

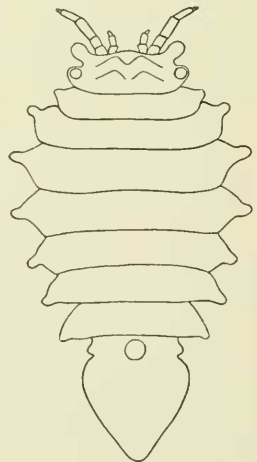


FIG. 23.—EDOTEA ACUTA.

Color white.

Three specimens were found in the stomach of a cod, taken by the U. S. Fish Commission steamer *Albatross*,

*Depth*.—105 fathoms.

*Type*.—Cat. No. 23909, U.S.N.M.

112. *EDOTEA TRILOBA* (Say).

*Idotea triloba* SAY, Jour. Acad. Nat. Sci. Phila., I, 1818, p. 425.—MILNE-EDWARDS, Hist. Nat. des Crust., III, 1840, p. 134.

*Jera triloba* WHITE, List Crust. Brit. Mus., 1847, p. 97.

*Epeplys trilobus* SMITH, Report U. S. Commissioner of Fish and Fisheries, 1874, Pt. 1, p. 571 (277), pl. vi, fig. 28.—VERRILL, Am. Jour. Sci., VII, 1874, p. 135; Proc. Amer. Assoc., 1873, p. 372, 1874; Report U. S. Commissioner of Fish and Fisheries, 1874, Pt. 1, p. 370 (76).—HARGER, Proc. U. S. Nat. Mus., II, 1879, p. 160; Report U. S. Commissioner of Fish and Fisheries, 1880, Pt. 6, pp. 358-359, pl. vii, figs. 42 and 43.

*Edotea triloba* MIERS, Jour. Linn. Soc. Lond., XVI, 1883, p. 70-71.

*Habitat*.—Egg Harbor, New Jersey; Savin Rock, near New Haven, Connecticut; Noank Harbor, Connecticut; Vineyard Sound, Provincetown, Massachusetts; near Cape Cod; Gloucester; 30 miles northeast of Portland, Casco Bay, Maine.

*Depth*.—Surface to one-half fathom.

113. *EDOTEA MONTOSA* (Stimpson).

*Idotea montosa* STIMPSON, Mar. Inv. Grand Manan, 1853, p. 40.

*Epeplys montosus* HARGER, Report U. S. Commissioner of Fish and Fisheries, Pt. 1, 1874, p. 571 (277); Proc. U. S. Nat. Mus., II, 1879, p. 161.—VERRILL, Am. Jour. Sci., VII, 1874, p. 45; Proc. Amer. Assoc., p. 367, 1874; Report U. S. Commissioner of Fish and Fisheries, Pt. 1, 1874, p. 370 (76).—SMITH and HARGER, Trans. Conn. Acad., III, 1874, p. 3.—HARGER, Report U. S. Commissioner of Fish and Fisheries, 1880, Pt. 6, p. 359-360, pl. viii, figs. 44-47.

*Edotea montosa* MIERS, Jour. Linn. Soc. Lond., XVI, 1883, p. 72.

*Habitat*.—Block Island Sound; Long Island Sound; Vineyard Sound; Eastport, Maine; Georges Bank; Stellwagens Bank; Casco Bay; Bay of Fundy; Halifax, Nova Scotia; Grand Manan.

*Depth*.—2 to 40 fathoms.

Family XIII. ARCTURIDÆ.

ANALYTICAL KEY TO THE GENERA OF ARCTURIDÆ.

- a*. Fourth segment of thorax not greatly longer than others. Marsupium of female composed of four pairs of plates ..... 47. *Arcturus*.  
*a'*. Fourth segment of thorax much longer than any of the others. Marsupium of female consisting of two plates affixed to this segment ..... 48. *Astacilla*.

## 47. ARCTURUS Latreille.

## ANALYTICAL KEY TO THE SPECIES OF ARCTURUS.

- a. Terminal segment of abdomen armed with a long median terminal spine, projecting beyond the end of the segment.
- b. Head with two spines. Second joint of second pair of antennæ armed with one spine at upper end. Thorax with few spines. Surface of terminal abdominal segment smooth.
- c. Second joint of peduncle of second pair of antennæ without spine at base on outer margin. First pair of antennæ extending one-third the length of the third joint of second pair of antennæ. Dorsal spines wanting on second abdominal segment. Spines wanting on opercular valves. Anterior thoracic appendages furnished with a number of spines on the proximal joints.
114. *Arcturus purpureus* Beddard.
- c'. Second joint of peduncle of second pair of antennæ with spine at base on outer margin. First pair of antennæ extending two-thirds the length of the third joint of second pair of antennæ. Dorsal spines present on second abdominal segment. Spines present on opercular valves. Anterior thoracic appendages without spines except on penultimate joint.
115. *Arcturus caribbæus*, new species.
- b'. Head with eight spines. Second joint of second pair of antennæ armed with three spines at the upper end. Thorax with many spines. Surface of terminal abdominal segment with three rows of spines on dorsal surface. Row of spines on each opercular valve..... 116. *Arcturus floridanus* Richardson.
- a'. Terminal segment of abdomen not armed with a long median terminal spine.
- b. Four anterior segments of thorax with spines or tubercles. Middle surface of abdomen with prominent spiny projections. With conical lateral projections. Epimera pointed..... 117. *Arcturus baffini* (Sabine).
- b'. Four anterior segments of thorax without spines or tubercles. Middle surface of abdomen without any indication of prominent spiny projections. Without conical lateral projections. Epimera less pointed.
118. *Arcturus feildeni* Miers.

## 114. ARCTURUS PURPUREUS Beddard.

*Arcturus purpureus* BEDDARD, Proc. Zool. Soc. Lond., 1886, Pt. 1, p. 109; Report on the Scientific Results of the Exploring Voyage of H. M. S. *Challenger*, Zool. XVII, pp. 112, 113.

*Habitat*.—Off Sombrero Island.

*Depth*.—450 fathoms.

## 115. ARCTURUS CARIBBÆUS, new species.

Head with a deep excavation on the anterior margin, on either side of which the antero-lateral margins are produced, each bearing a short spine at the outer angle. Two long spines are situated on the anterior portion of the head, between the eyes. The first pair of antennæ, consisting of four joints, reach two-thirds of the length of the third joint of the second pair of antennæ. The first joint of the second pair of antennæ is short and unarmed; the second joint is armed with a small spine at the base on the outer margin, and a large spine

on the upper lateral margin; the third joint is about three times as long as the second joint, and is armed with two long spines at the upper end; the fourth joint is about twice as long as the third joint, and is armed with a single spine at the upper end; the fifth joint is somewhat longer than the fourth and is unarmed; the flagellum is long and consists of ten joints.

The first, second, third, and fifth thoracic segments have each two long projecting spines on either side of the median dorsal line. The fourth, sixth, and seventh segments are without these spines. The first segment has three spines, one large central spine and two small spines on each antero-lateral margin. All the other thoracic segments have one long spine on each lateral margin.

The first abdominal segment has one lateral spine on each side; the second segment has two dorsal spines, one on either side of the median line. The third segment has one lateral spine on each side. The terminal segment is rounded in outline posteriorly, with two lateral spines on either side, one a little below the middle and one near the posterior margin of the segment. There is also a large terminal spine on the dorsal surface.

The opercular valves are armed each with a single spine about the center of the valve. The penultimate joint of the second, third, and fourth anterior pairs of legs is armed with a single spine.

One specimen of this species was taken by the U. S. Fish Commission steamer *Albatross* near Aves Island, Caribbean Sea.

*Type*.—Cat. No. 9113, U.S.N.M.

This species closely resembles *Arcturus purpureus* Beddard, differing from that species in having two dorsal spines on the second abdominal segment, spines on the opercular valves, and at the base on the outer margin of the second joint of the peduncle of the second pair of antennæ, in wanting spines on the proximal joints of the anterior thoracic appendages, with the exception of the penultimate joint, and in the greater length of the first pair of antennæ.

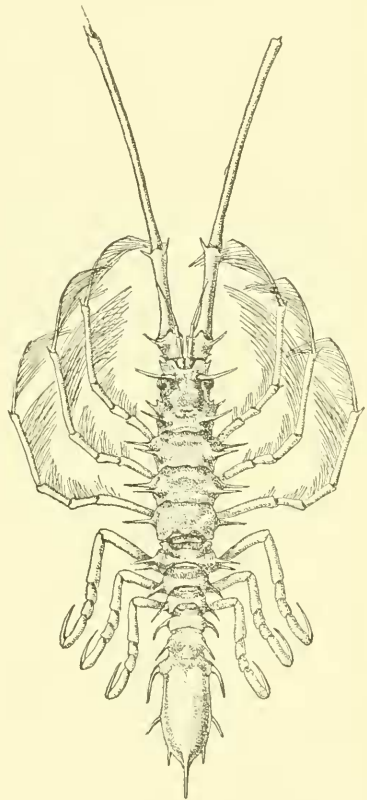


FIG 24.—ARCTURUS CARIBBEUS.



## 116. ARCTURUS FLORIDANUS Richardson.

*Arcturus floridanus* RICHARDSON, Am. Nat., XXXIV, 1900, p. 230.

Head with deep anterior excavation, on each side of which the lateral margins are produced, bearing each a single spine at the outer angle. On the anterior portion of the head are two long spines situated between the eyes. Two long spines are placed on the posterior portion of the head, between the line of the eyes, on either side of which are two small spines, one near each eye and one on the lateral margin. The first pair of antennæ are short, reaching only half the length of

the third joint of the second pair of antennæ. The first joint of the second pair of antennæ is short and unarmed; the second joint has one short spine at the base and three long ones at the upper end; the third joint is nearly three times as long as the second joint and has two long spines at the upper end; the fourth joint is armed with a single spine; the fifth joint is unarmed; the flagellum is nine-jointed.

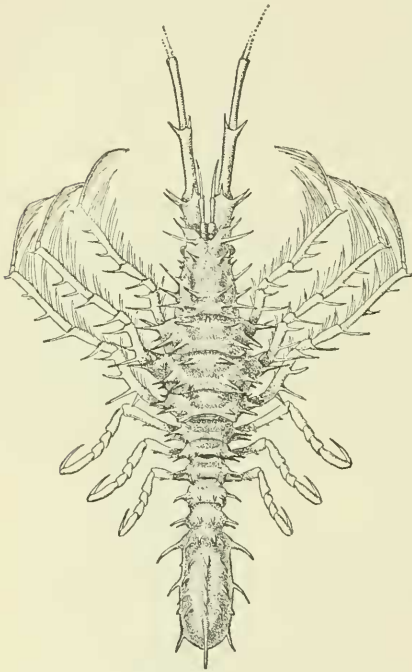


FIG. 25.—ARCTURUS FLORIDANUS.

The first thoracic segment has two dorsal spines on the anterior part, one on either side of the median line, six spines on the posterior part, three on either side of the median line, and two lateral spines; the second thoracic segment has three spines on the anterior portion, one on the median line and one on either side of it, four spines on the poste-

rior portion, two on either side of the median line, and three lateral spines; the third thoracic segment has two spines on the anterior portion, one on either side of the median line, four spines on the posterior portion, two on either side of the median line, and four lateral spines; the fourth segment has two spines on the anterior part, one on either side of the median line, four spines on the posterior part, two on either side of the median line, and four lateral spines; the fifth segment has two spines widely separated, one on either side of the median line, and one lateral spine; the sixth and seventh segments have six spines, three on either side of the median line, and one lateral spine.

The first three abdominal segments have each eight small spines,



four on either side of the median line. The terminal segment has one median row of spines and a row on either side of this and a lateral row. The median row consists of five small spines and one large terminal spine. The dorsal row on either side of the median row each consists of four spines. The outer marginal lateral rows each consists of three spines. The opercular valves bear each a longitudinal row of eight spines.

Both the anterior and the posterior pairs of legs are covered with spines, the anterior ones more densely.

Two specimens, one imperfect, were obtained by the U. S. Fish Commission steamer *Albatross*, at Fernandina, Florida.

*Type*.—Cat. No. 11522, U.S.N.M.

#### 117. ARCTURUS BAFFINI (Sabine).

*Idotea baffini* SABINE, Suppl. to App. to Capt. Parry's Voyage, 1824, p. 228, pl. 1, figs. 4-6.

*Arcturus baffini* MILNE-EDWARDS, Hist. Nat. Crust., III, p. 123, pl. XXXI, fig. 1.—G. O. Sars, Den Norske Nordhavs-Exped., Zool., Crust., I, p. 97, pl. ix, figs. 1-21.—HANSEN, Vid. Medd. naturh. Foren. i Kjøebh., 1887, p. 188.—AXEL OHLIN, Bidrag till Kannedomen om Malakostrakfaunan i Baffin Bay och Smith Sound, 1895, pp. 15-18.

*Habitat*.— $65^{\circ} 35'$  N. lat.,  $54^{\circ} 50'$  W. long.;  $66^{\circ} 32'$  N. lat.,  $55^{\circ} 34'$  W. long.;  $67^{\circ} 59'$  N. lat.,  $56^{\circ} 33'$  W. long.;  $68^{\circ} 9'$  N. lat.,  $56^{\circ} 32'$  W. long.;  $70^{\circ} 21'$  N. lat.,  $55^{\circ} 40'$  W. long.;  $71^{\circ} 10'$  N. lat.,  $58^{\circ} 56'$  W. long.;  $78^{\circ} 24'$  N. lat.,  $74^{\circ}$  W. long.; Inglefield Gulf; Murchison Sound; Cape Faraday;  $72^{\circ} 38'$  N. lat.,  $77^{\circ} 10'$  W. long.;  $72^{\circ} 8'$  N. lat.,  $74^{\circ} 20'$  W. long.

*Depth*.—5 to 150 fathoms.

#### 118. ARCTURUS FEILDENI Miers.

*Arcturus baffini* var. *feildeni* MIERS, Ann. Mag. Nat. Hist. (4), XX, 1877, p. 64.

*Arcturus feildeni* BENEDICT, Proc. Biol. Soc. Wash., XII, 1898, p. 44.

*Habitat*.—Camp Clay, Cape Sabine; Davis Straits; off Churchill, Hudson Bay.

*Depth*.—30 fathoms.

### 48. ASTACILLA Fleming.

#### ANALYTICAL KEY TO THE SPECIES OF ASTACILLA.

- a.* With eyes. Head excavate in front without rostriform point. Fourth thoracic segment subcylindrical. Terminal abdominal segment with a prominent, subacute tooth on each side, above the middle, directed outward and backward; extremity obtuse..... 119. *Astacilla granulata* (G. O. Sars).
- a.* Without eyes. Head with a rostriform point in front, between the antennae. Fourth thoracic segment wider at the anterior end, and tapering to the posterior end. Terminal abdominal segment with a pair of teeth on each side; extremity acute..... 120. *Astacilla caeca* Benedict.

119. *ASTACILLA GRANULATA* (G. O. Sars).

*Leachia granulata* G. O. Sars, Arch. Math. Nat., II, 1877, p. 351 (251).

*Astacilla americana* HARGER, Am. Jour. Sci., XV, 1878, p. 374.

*Astacilla granulata* HARGER, Proc. U. S. Nat. Mus., II, 1879, p. 161; Report U. S. Commissioner of Fish and Fisheries, 1880, Pt. 6, pp. 364-367, pls. VIII-IX, figs. 48-52.

*Habitat*.—Georges Bank; Banquereau; Miquelon Island, south of Newfoundland; also between Norway and Iceland.

*Depth*.—7 to 250 fathoms.

120. *ASTACILLA CÆCA* Benedict.

*Astacilla cæca* BENEDICT, Proc. Biol. Soc. Washington, XII, 1898, p. 51.

*Habitat*.—Lat. 38° 22' N., Long. 70° 17' 30" W. (South of Marthas Vineyard.)

*Depth*.—1,825 fathoms.

## IV. ASELLOTA or ASELLOIDEA.

## ANALYTICAL KEY TO THE FAMILIES OF ASELLOTA.

- a.* Eyes generally present. First pair of legs prehensile or subcheliform. Last three pairs of legs ambulatory, not natatory.
- b.* Three posterior segments of thorax not sharply marked off from the four anterior ones, and not smaller. Caudal segment large, shieldlike. Eyes, when present, lateral or subdorsal, not placed on peduncle-like projections of the head. Superior antennæ issuing close together. Legs subequal in length.
- c.* Lateral parts of head scarcely expanded. Eyes, when present, small, lateral. Peduncle of inferior antennæ without small accessory appendage outside of third joint. Legs ambulatory, except first pair, which are distinctly subcheliform; legs with dactylus generally uni-unguiculate. First pair of pleopoda in female very small, not operculiform. Outer lamella of second pair very large and incrustated, so as to form, together with corresponding lamellæ of the other side, a sort of operculum, covering the two succeeding pairs. . . . . Family XIV. ASELLIDÆ (p. 551).
- c'.* Lateral parts of head lamellarly expanded. Eyes, when present, usually subdorsal. Peduncle of inferior antennæ generally with small accessory appendage outside of third joint. Legs ambulatory, except first pair, which are sometimes prehensile; legs with dactylus generally bi- or tri-unguiculate. First pair of pleopoda in female transformed into a single, large opercular plate. Outer lamellæ of two succeeding pairs narrow and confluent with basal part. . . . . Family XV. JANIRIDÆ (p. 553).
- b'.* Three posterior segments of thorax, as a rule, sharply marked off from four anterior ones, and much smaller. Caudal segment more or less vaulted above, subpyriform. Eyes, when present, placed on the tips of lateral peduncle-like projections of the head. Superior antennæ placed widely apart. First pair of legs much shorter than others. Succeeding pairs more or less rapidly increasing in length . . . . . Family XVI. MUNNIDÆ (p. 556).
- a'.* Eyes wanting. First pair of legs subprehensile. Last three pairs of legs natatory, with some of joints flattened and ciliated. First pair of legs shorter than three following pairs. Second, third, and fourth pairs very elongate. . . . . Family XVII. MUNNOPSIDÆ (p. 557).

## Family XIV. ASELLIDÆ.

## ANALYTICAL KEY TO THE GENERA OF ASELLIDÆ.

- a.* Mandibles without a palp. Last six pairs of legs with dactylus biunguiculate. 49. *Mancasellus*.
- a'*. Mandible with a three-jointed palp. Last six pairs of legs ununguiculate.
- b.* Eyes present. Body oblong, depressed. Head small, narrower and shorter than first thoracic segment. Caudal segment not longer than broad. 50. *Asellus*.
- b'*. Eyes wanting. Body elongate, narrow. Head large, not narrower than first thoracic segment, and longer. Caudal segment much longer than broad. 51. *Cecidotea*.

## 49. MANCASELLUS Harger.

## ANALYTICAL KEY TO THE SPECIES OF MANCASELLUS.

- a.* Lateral margins of head entire ..... 121. *Mancasellus brachyurus* Harger.
- a'*. Lateral margins of the head not entire. External antennæ as long or longer than the body ..... 122. *Mancasellus lineatus* (Say).

## 121. MANCASELLUS BRACHYURUS Harger.

*Mancasellus brachyurus* HARGER, Am. Jour. Sci., XI (1876), pp. 304, 305.—BOVALLIUS, Bihang till K. Sv. Vet.-Akad. Handl., II, No. 15, 1886, p. 39.

*Habitat*.—McKee's Spring, Lexington, Virginia.

## 122. MANCASELLUS LINEATUS (Say).

*Asellus lineatus* SAY, Jour. Ac. Nat. Sci. Phila., I, 1818, p. 428.

*Habitat*.—South Carolina.

## 50. ASELLUS Geoffroy.

## ANALYTICAL KEY TO THE SPECIES OF ASELLUS.

- a.* Caudal stylets broad and flattened. Propodus of first pair of legs much enlarged and subglobular, with a prominent acute tooth about or a little above the middle and a lobe bearing one or two acute teeth near the base on its palmar margin ..... 123. *Asellus communis* Say.
- a'*. Caudal stylets extremely narrow and cylindrical. Propodus of first pair of legs narrow, elongate, without prominent acute tooth on its palmar margin. 124. *Asellus attenuatus* Richardson.

## 123. ASELLUS COMMUNIS Say.

*Asellus communis* SAY, Jour. Ac. Nat. Sci., Phila., I, 1818, pp. 427, 428.—SMITH, Rep. U. S. Fish Com., 1874, p. 657.

*Habitat*.—Schuylkill River, Pennsylvania; Connecticut; Massachusetts; New York; Indiana; Illinois; Michigan; Mississippi.

124. *ASELLUS ATTENUATUS* Richardson.

*Asellus attenuatus* RICHARDSON, *Am. Nat.*, XXXIV, 1900, p. 297.

Body narrowed anteriorly, gradually increasing in width backward.

Head narrower than the first thoracic segment, rounded at the sides with margins entire and a small lobe near the base on either side; front somewhat excavate for the reception of the antennæ. Eyes distinct, lateral. First pair of antennæ as long as the peduncle of the



FIG. 26.—*ASELLUS ATTENUATUS*.

second pair; first joint short and broad; second joint more slender; third joint not quite as long as second joint; flagellum composed of thirteen joints. Second pair of antennæ as long as the body; first, second, and third joints short, about equal in length; fourth and fifth joints long; flagellum multiarticulate.

Segments of thorax with the lateral margins of the first segment slightly emarginate anteriorly, the emargination being filled by the epimeron; second, third, and fourth segments with the margins entire, the epimera evident at the extreme anterior angles; the fifth segment with the posterior two-thirds emarginate, the epimeron conspicuous in

the emargination; the sixth and seventh segments posteriorly emarginate, with prominent epimera.

Terminal segment of the body about as broad as long, with a small rounded lobe in the middle of the posterior margin. The uropoda are somewhat longer than the terminal segment, extremely slender and cylindrical in shape, with both branches nearly equal in length, and longer than the peduncle.



FIG. 28.—LEG OF THE FIRST PAIR.



FIG. 27.—a. MAXILLIPED; b. MANDIBLE.

The legs of the first pair are slender; the dactylus is serrate along the inner margin, the propodus is narrow, oval in shape, and unarmed.

The color is reddish-brown mottled with white. All the free margins of the body are fringed with hairs. The lateral margins of the segments and the caudal segment are armed with spines. The uropoda and the legs are spinulose.

A large number of specimens were collected by Mr. William Palmer and Mr. Paul Bartsch, at Washington Ditch, Dismal Swamp, Virginia.

*Type*.—Cat. No. 23910, U.S.N.M.

51. *CÆCIDOTEA* Packard.

125. *CÆCIDOTEA STYGIA* Packard.

*Cæcidotea stygia* PACKARD, Am. Naturalist, V, 1871, p. 752, figs. 132, 133.

*Cæcidotea microcephala* COPE, Am. Naturalist, V, 1872 p. 411, fig. 109.

*Habitat*.—Graham's Spring, Lexington, Virginia; also Mammoth Cave, Kentucky, and wells in Indiana.

Family XV. JANIRIDÆ.

ANALYTICAL KEY TO THE GENERA OF JANIRIDÆ.

- a. Head without any true rostrum. First pair of antennæ extremely small with flagellum rudimentary. Second pair of antennæ of moderate length, without any distinctly squamiform appendage. First pair of legs not prehensile. Uropoda extremely small, branches very short, nodiform ..... 52. *Jera*.
- a'. Head with prominent rostral projection, obtuse in front or with a comparatively short rostral projection. First pair of antennæ well developed, flagellum multi-articulate. Second pair of antennæ very much elongated with a well-marked scale-like appendage outside of third joint. First pair of legs prehensile, carpus large, subfusiform and edged inside with spines; propodus narrow, linear, and very movably articulated to carpus, so as to admit of being bent against it. Uropoda largely developed, with branches slightly unequal.
- b. Head with lateral parts produced to very prominent acute lappets. Segments of thorax with lateral parts laciniate and produced. Caudal segment forming on each side, at the end, a triangular expansion ..... 53. *Tanthe*.
- b'. Head with lateral parts not produced into lappets. Segments of thorax with lateral parts not produced, not laciniate. Caudal segment rounded, not expanded laterally ..... 54. *Janira*.

## 52. JÆRA Leach.

## 126. JÆRA MARINA (Fabricius).

*Oniscus marinus* FABRICIUS, Fauna Grönlandica, p. 252.

*Oniscus albifrons* MONTAGU, manuscript (LEACH).

*Jæra albifrons* LEACH, Ed. Encyc., VII, 1813-14, p. 434 (Am. ed., p. 273); Trans. Linn. Soc., XI, 1815, p. 373.—DESMAREST, Dict. Sci. Nat., XXVIII, 1823, p. 381; Consid. Crust., 1825, p. 316.—LATREILLE, Règne Anim., IV, 1829, p. 141.—EDWARDS, Annot. de Lamarck, V, 1838, p. 267; Hist. Nat. des Crust., III, 1840, p. 150; Règne Anim., Crust., 1849, p. 204.—LILLJEBORG, Öfvers. vet. Akad. Forh., VIII, 1851, p. 23; IX, 1852, p. 11.—M. SARS, Christ. Vid. Selsk. Forh., p. 153, 1859.—BATE, Rep. Brit. Assoc., 1860, p. 225, 1861.—G. O. SARS, Reise ved Kyst. of Christ., 1866, p. 29; Christ. Vid. Selsk. Forh., 1871, p. 272, 1872.—NORMAN, Rep. Brit. Assoc., 1866, p. 197, 1867; 1868, p. 288, 1869.—BATE and WESTWOOD, Brit. Sess. Crust., II, 1868, p. 317, fig.—STEBBING, Jour. Linn. Soc. Lond., Zool., XII, 1874, p. 149; Ann. Mag. Nat. Hist. (4), XVII, 1876, p. 79, pl. v, figs. 5, 6; Trans. Devon. Assoc., 1879, p. 7.—MEINERT, Crust. Isop. Amph. Dec. Dan., 1877, p. 80.—HARGER, Proc. U. S. Nat. Mus., 1879, II, p. 158; Report U. S. Commissioner of Fish and Fisheries, 1880, Pt. 6, pp. 315-318, pl. 1, figs. 4-8. (See Harger for synonymy.)

*Jæra kroyeri* ZADDACH, Syn. Crust. Pruss. Prod., 1844, p. 11.

*Jæra baltica* FRIED. MÜLLER, Arch. Naturg., XIV, 1848, p. 63, pl. iv, fig. 29.

*Jæra copiosa* STIMPSON, Mar. Inv. Grand Manan, 1853, p. 40, pl. iii, fig. 29.—VERRILL, Am. Jour. Sci. (3), VII, 1874, p. 131; Proc. Amer. Assoc., 1873, p. 369, 1874; Report U. S. Commissioner of Fish and Fisheries, 1874, Pt. 1, p. 315 (21).—HARGER, Report U. S. Commissioner of Fish and Fisheries, 1874, Pt. 1, p. 571 (277).

*Jæra nivalis* PACKARD, Mem. Bost. Soc. Nat. Hist., I, 1867, p. 296.

*Asellus grönlandicus* PACKARD, Mem. Bost. Soc. Nat. Hist., I, 1867, p. 296.

*Jæra marina* MÖBIUS, Wirbellos. Thiere der Ostsee, 1873, p. 122; Am. Mag. Nat. Hist. (4), XII, 1873, p. 85.

*Jæra maculata* PARFITT, Trans. Devon. Assoc., 1873, p. 253 (18).—STEBBING, Trans. Devon. Assoc., 1879, p. (7).

*Jæra marina* SARS, Crust. of Norway, II, Pt. 1, 1897, p. 104.

*Habitat*.—Whole coast of New England; Labrador; Bay of Fundy; also coasts of England, Scotland, Finmark, and all the coasts of the North Sea; Germany.

*Depth*.—Found on surface.

## 53. IANTHE Bovallius.

## ANALYTICAL KEY TO THE SPECIES OF IANTHE.

- a. Rostrum as long as head. Flagellum of first pair of antennæ 12-articulated, shorter than breadth of head. Flagellum of second pair of antennæ 50-articulated. First thoracic segment shorter than second. Second and third segments equal, longest, much longer than seventh. Terminal segment smooth on dorsal side, without spine-like tubercle. Peduncles of uropoda longer than postero-lateral angulations of terminal segment. . . . . 127. *Ianthe spinosa* (Harger).
- a'. Rostrum much longer than head. Flagellum of first pair of antennæ 60 to 70 articulated, nearly as long as breadth of head. Flagellum of second pair of antennæ 280-articulated. First thoracic segment as long as second. Seventh segment is longest. Terminal segment with a single spine-like tubercle on its dorsal side. Peduncles of uropoda shorter than postero-lateral angulations of terminal segment of body. . . . . 128. *Ianthe speciosa* Bovallius.



## 127. IANTHE SPINOSA (Harger).

*Janira spinosa* HARGER, Proc. U. S. Nat. Mus., II, 1879, p. 158; Report U. S. Fish Commissioner, 1880, Pt. 6, pp. 323, 324.

*Ianthe spinosa* BOVALLIUS, Bihang t. Kgl. Sv. Vet. Akad. Handl., XI, No. 15, 1886, p. 35.

*Janira spinosa* HANSEN, Vid. Medd. naturh. Foren. i. Kjoebh., 1887, p. 191.

*Habitat*.—Banquereau; 65° 35' N. lat., 54° 50' W. long.; 66° 32' N. lat., 55° 34' W. long.; 67° 59' N. lat., 56° 33' W. long.

*Depth*.—80 to 100 fathoms.

## 128. IANTHE SPECIOSA Bovallius.

*Ianthe speciosa* BOVALLIUS, Bihang till K. Sv. Vet. Akad. Handl., VI No. 4, p. 5; XI, No. 15, 1886, p. 35.

*Habitat*.—Bullins Bay.

## 54. JANIRA Leach.

## ANALYTICAL KEY TO THE SPECIES OF JANIRA.

- a*. Anterior margin of head straight ..... 129. *Janira maculosa* Leach.  
*a'*. Anterior margin of head produced in the middle in a short sharp rostrum, and the antero-lateral angles of head also produced.  
*b*. Antero-lateral angles of head sharp. Lateral margins of first four thoracic segments obtusely incised, each showing two broad angulations. Uropoda of female shorter than half the terminal segment. Those of male as long as terminal segment of body ..... 130. *Janira tricornis* (Krøyer).  
*b'*. Antero-lateral angles of head shorter and less sharp. Margins of first thoracic segment rounded, not emarginate. Uropoda alike in the two sexes, and as long as terminal segment of body ..... 131. *Janira alta* (Stimpson).

## 129. JANIRA MACULOSA Leach.

*Janira maculosa* LEACH, Edinburgh Encyclop., VII, 1813-14, p. 434.

*Henopomus muticus* KRØYER, Voy. en Scand., Crust., pl. xxx, figs. 1a-n; Nat. Tidsskr., Ny R., II, p. 366.—HANSEN, Vid. Medd. naturh. Foren. i Kjoebh., 1887, p. 190.

*Habitat*.—66° 32' N. lat., 55° 34' W. long.; 72° 32' N. lat., 58° 51' W. long.; also British Isles; Kattegat; Dutch Coast; coast of France; coast of Norway.

*Depth*.—100 to 116 fathoms.

## 130. JANIRA TRICORNIS (Krøyer).

*Henopomus tricornis* KRØYER, Voy. en Scand., Crust., pl. xxx, figs. 2 a-q; Nat. Tidsskr. Ny R., II, 1847, p. 372.—HANSEN, Vid. Medd. naturh. Foren. i Kjoebh., 1887, pp. 190-191.

*Habitat*.—Kangerdhuassuk; Sukkertoppen; Egesminde; 65° 11' N. lat., 53° 33' W. long.

*Depth*.—5 to 50 fathoms.

## 131. JANIRA ALTA (Stimpson).

*Ascellodes alta* STIMPSON, Mar. Inv. Grand Manan, 1853, p. 41, pl. III, fig. 30.—  
VERRILL, Am. Jour. Sci., VI, 1873, p. 439; VII, 1874, pp. 411-502; Proc.  
Amer. Assoc., 1873, p. 350, 1874.

*Janira alta* HARGER, Proc. U. S. Nat. Mus., 1879, II, p. 158; Report U. S. Com-  
missioner of Fish and Fisheries, 1880, Pt. 6, pp. 321, 322, pls. 11-111, figs. 9,  
12, 13.

*Habitat*.—Long Island; Massachusetts Bay; near Eastport, Maine;  
Gulf of Maine; Grand Manan; Bay of Fundy; 120 miles south of  
Halifax; Clarkes Ledge; 30 miles east of Sable Island.

*Depth*.—35 to 300 fathoms.

## Family XVI. MUNNIDÆ.

## 55. MUNNA Krøyer.

## ANALYTICAL KEY TO THE SPECIES OF MUNNA.

- a*. Caudal segment with lateral edges evenly convex, and each armed with a single slender denticle; apical lamellæ distinctly serrated. Eyes large. Superior antennæ with flagellum composed of four joints, including very small apical joint. Flagellum of inferior antennæ longer than peduncle. Last pair of legs scarcely longer than body. Legs slender. Uropoda obliquely truncate at tip ..... 132. *Munna fabricii* Krøyer.
- a'*. Caudal segment with lateral edges rather bulging in front, and each armed with four strong denticles; without any serrulated lamellæ. Eyes small. Superior antennæ with flagellum composed of three joints, including very small apical joint. Flagellum of inferior antennæ not attaining length of peduncle. Last pair of legs scarcely longer than anterior division of body. Legs shorter and stouter than usual. Uropoda produced at tip into several dentiform projections, one of which is hook-like..... 133. *Munna krøyeri* Goodsir.

## 132. MUNNA FABRICII Krøyer.

*Munna fabricii* KRØYER, Nat. Hist. Tidssk. (2), II, p. 380; Voy. en Scand.,  
Crust., pl. XXXI, figs. 1a-q.—REINHARDT, Grönland's Krebsdyr., 1857, p.  
35.—M. SÆRS, Christ. Vid. Selsk. Forh., 1858, pp. 154, 1859.—LÜTKEN,  
Greenland Crust., 1875, p. 150.—HARGER, Proc. U. S. Nat. Mus., 1879, II,  
p. 159; Report U. S. Commissioner of Fish and Fisheries, 1880, Pt. 6, pp.  
325-328, pl. III, fig. 14.—G. O. SÆRS, Crust. of Norway, II, Pts. 5, 6, pp. 108,  
109, 1896.

*Habitat*.—South Bay. Eastport; Casco Bay; Western Bank; Browns  
Bank; southern Greenland; also coast of Finmark; coast of Norway.

*Depth*.—12 to 200 fathoms.

## 133. MUNNA KRØYERI Goodsir.

*Munna krøyeri* GOODSIR, Edinb. New Phil. Journ., XXXIII, p. 365, pl. VI,  
fig. 2.—BATE and WESTWOOD, Brit. Sessile-eyed Crust., II, p. 326.  
*Munna whiteana* BATE and WESTWOOD, Brit. Sessile-eyed Crust., II, p. 329.  
*Munna krøyeri* HANSEN, Vid. Medd. naturh. Foren. i Kjøebn., 1887, pp. 194,  
195.—G. O. SÆRS, Crust. of Norway, II, Pts. 5, 6, pp. 109, 110, 1896.

*Habitat*.—Godthaab and Upernivik, Greenland; coast of Norway.

*Depth*.—10 to 60 fathoms.

## Family XVII. MUNNOPSISÆ.

## ANALYTICAL KEY TO THE GENERA OF MUNNOPSISÆ.

- a. Head of moderate size, deeply emarginate on each side for the insertion of the antennæ, frontal part produced. First four thoracic segments transversely excavated dorsally. Superior antennæ with flagellum multiarticulate. Natatory legs of the same structure, carpal joint foliaceous.
- b. Body with anterior division much broader than posterior; three posterior segments densely crowded together. Caudal segment oblong-oval. Mandibles without any molar expansion; cutting edge but slightly dentated. First two pairs of legs of same structure, though somewhat different in size; two succeeding pairs elongated. Dactylus wanting on natatory legs. Uropoda simple, biarticulate. . . . . 56. *Munnopsis*.
- b'. Body with anterior division less sharply marked off from posterior; three posterior segments very large and broad. Caudal segment semioval. Mandibles with molar expansion; cutting edge divided into strong teeth. First pairs of legs shorter than three succeeding pairs, which are subequal and very much elongated. Dactylus distinct on natatory legs. Uropoda biramous, branches single jointed. . . . . 57. *Eurycope*.
- c'. Head very large and broad, transversely truncated in front, lateral parts greatly expanded. First four thoracic segments slightly excavated transversely. Superior antennæ with flagellum not much elongated. First two pairs of natatory legs of similar structure, carpal joint large and expanded, cordiform; last pair much narrower than two succeeding pairs, carpal joint but slightly expanded. Caudal segment triangular in form . . . . . 58. *Ilyarachna*.

## 56. MUNNOPSIS M. Sars.

## 134. MUNNOPSIS TYPICA M. Sars.

*Munnopsis typica* M. Sars, Chr. Vid. Selsk. Forh., 1860, p. 84, 1861; Chr. Fjord Fauna, 1868, p. (70), pls. vi, vii, figs. 101-138; Chr. Vid. Selsk. Forh., 1868, p. 261, 1869.—G. O. Sars, Chr. Vid. Selsk. Forh., 1863, p. 206, 1864; Reise ved Kyst af Christ., 1866, p. (5); Chr. Fjord Dybvands-fauna, 1869, p. (44); Chr. Vid. Selsk. Forh., 1872, p. 79, 1873; Arch. Math. Nat., II, 1877, p. 353 (253).—BUCHHOLZ, Zweite Deutsche Nordpolfahrt, Crust., 1874, p. 285.—HELLER, Denksch. Acad. Wiss. Wien, XXXV, 1875, p. (14) 38.—NORMAN, Proc. Royal Soc., XXV, 1876, p. 208.—MIERS, Ann. Mag. Nat. Hist. (4), XX, 1877, p. 65.—HARGER, Proc. U. S. Nat. Mus., II, 1879, p. 159; Report U. S. Commissioner of Fish and Fisheries, 1880, Pt. 6, pp. 330-332, pl. II, fig. 11.—AXEL OHLIN, Bidrag till Kannedomen om Malakostrakfaunan i Baffin Bay och Smith Sound, 1895, p. 18 (see Harger for synonymy).

*Habitat*.—Bay of Fundy; Gulf of St. Lawrence; Baffin Bay; Davis Straits; Murchison Sound; 72° 8' N. lat., 74° 20' W. long.; 71° 57' N. lat., 73° 56' W. long.; Cape Napoleon, Grinnell Land; between Norway and Iceland; Christiania fiord; Christiania Sound; off Storeggen; Loffoden Islands; coast of Finmark; Spitzbergen; Arctic Ocean; Kara Sea.

*Depth*.—5 to 122 fathoms.

## 57. EURYCOPE G. O. Sars.

## ANALYTICAL KEY TO THE SPECIES OF EURYCOPE.

*a.* Front of head produced to an acute rostriform projection. Base of head without short transverse ridge. First, second, third, and fourth segments smooth, and produced on each side to acute, anteriorly pointed lappets. Three posterior segments smooth, with antero-lateral angles acutely produced. Caudal segment large, semioval in form, edges evenly curved, and perfectly smooth.

135. *Eurycope cornuta* G. O. Sars.

*a'.* Front of head has appearance of rostral point caused by frontal margin extending between antennule. Base of head with short transverse, tubercular ridge; two oblong, low tubercles situated behind peduncles of antennule. First segment of thorax with transverse groove. Second, third, and fourth segments have deep transverse depressions, with a sharp spine on anterior portion of each segment, and a compressed protuberance on the posterior portion. Antero-lateral angles of each of these segments produced in short, sharp spines. Epimera of first segment has a single spine, of three following segments two spines each. Three posterior segments of thorax have each two spines, one on either side of median line. Spine at base of abdomen. At extremity of terminal segment is spine, on either side of which is a lateral triangular spine.

136. *Eurycope caribbea* Benedict, new species.

## 135. EURYCOPE CORNUTA G. O. Sars.

*Eurycope cornuta* G. O. Sars, Chr. Vid. Selsk. Forhandl., 1863, p. 5.

*Eurycope robusta* HARGER, Am. Jour. Sci., XV, 1878, p. 375; Proc. U. S. Nat. Mus., II, 1879, p. 159; Report U. S. Commissioner of Fish and Fisheries, 1880, Pt. 6, pp. 332-334, pl. III, fig. 15.

*Eurycope cornuta* G. O. Sars, Crust. of Norway, II, Pts. 9, 10, 1897, p. 145.

*Habitat.*—Gulf of St. Lawrence; Atlantic coast of North America; also coast of Norway; Skagerak; Greenland; Kara Sea.

*Depth.*—119 to 220 fathoms.

136. EURYCOPE CARIBBEA Benedict, new species.<sup>1</sup>

The head is much wider than long. From the point between the antennule a depression curves backward and outward to the post lateral margin. On the base of the head is a short, transverse, tubercular ridge. Two oblong, low tubercles are situated closely behind the peduncles of the antennule. The sides of the head are swollen. The peduncles of the antennae and antennule occupy a space inclosed by the front and sides of the head; the margin surrounding these appendages is strongly raised.

The front of the head running between the antennule has the appearance of a rostral point; here the raised margins unite in the narrowest place and then immediately diverge and extend downward perpendicularly and around underneath the appendages, where they meet and lap with the produced and bent antero-lateral projections. The first joint of the peduncles of the antenna is very stout, with

<sup>1</sup>The description that follows is from Dr. Benedict's manuscript.

numerous depressions and prominences; the fourth segment is very long; the terminal portions are broken in all the specimens. The first joint of the peduncle of the antennula is excavated on one side to receive the curvature of the antennal peduncle; the other segments of the peduncle are very small; the flagellum is long and slender, with a great number of articles.

The first segment of the thorax is very narrow; nearly the whole

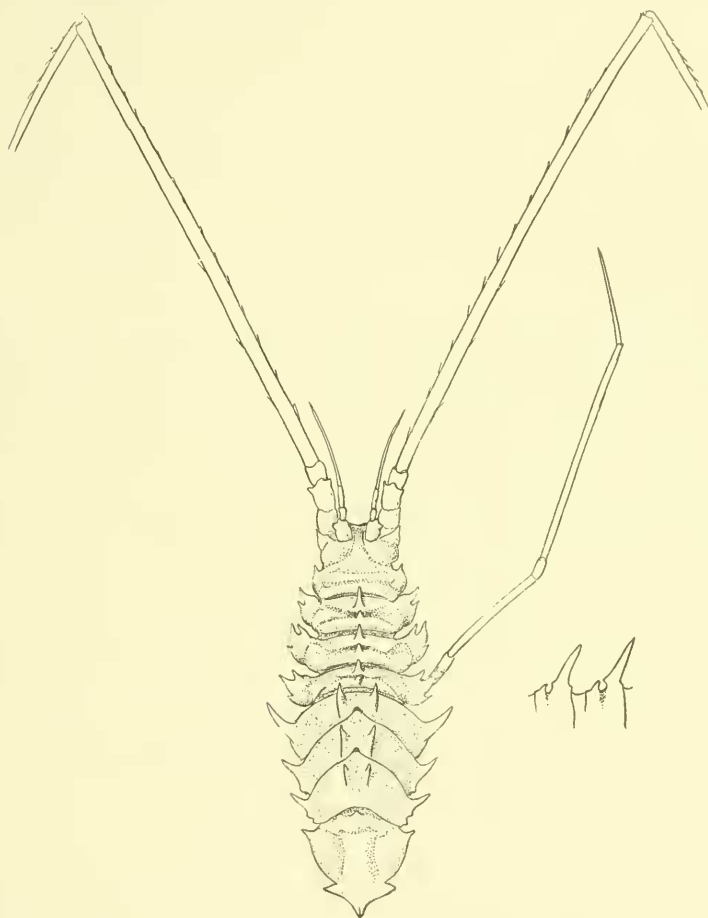


FIG. 29.—EURYCOPE CARIBBEA BENEDICT.

surface is occupied by a transverse groove; on the median line and posterior ridge is a prominent granule; the antero-lateral angles of this segment are rounded. The second, third, and fourth segments are also short and have deep transverse depressions which are much narrower than the one in the first segment; on the median line of these segments the space between the groove or depression and the anterior margin is occupied by the compressed base of a sharp spine which is

directed forward; between the depression and the posterior margin is a compressed protuberance; between the protuberances the transverse groove runs as a narrow cut rounded and enlarged at the bottom. The antero-lateral angles of the second, third, and fourth segments are produced forward in short, sharp spines.

The epimera of the four anterior segments have projecting spines; the first having a single spine, the other three having two spines each. The three posterior segments of the thorax are very much the same as in *E. fragilis*; the spines on either side of the median line decrease in size successively.

The spine on the base of the abdomen is short; there are two conspicuous granules nearly in the center and bottom of the two longitudinal depressions. The extremity of the abdomen is formed by a decurved spine; the upper surface of the spine is concave; on either side of the base of the terminal spine is a lateral triangular spine; these lateral spines do not in any measure curve forward, as is the case with *E. fragilis*.

On the median line of the ventral surface of the thorax there is a sharp, curved spine on the first segment, prominent longitudinal ridges on the second, third, and fourth segments, and a spiny tubercle followed by four longitudinal ridges. The ridges are separated by transverse grooves on the coalesced fifth, sixth, and seventh segments.

*Habitat*.—Windward Islands, West Indies.

*Depth*.—687 fathoms.

*Type*.—Cat. No. 23911, U.S.N.M.

#### 58. ILYARACHNA G. O. Sars.

#### 137. ILYARACHNA HIRTICEPS G. O. Sars.

*Ilyarachna hirticeps* G. O. Sars, Forh. Vid. Selsk. i Christiania 1869, p. 167, 1870.—HANSEN, Vid. Medd. naturh. Foren i Kjøebh, 1887, p. 195.

*Habitat*.—66° 32' N. lat., 55° 34' W. long.; 71° 10' N. lat., 58° 56' W. long.; 72° 41' N. lat., 59° 50' W. long. (Greenland).

*Depth*.—100 to 227 fathoms.

### V. ONISCOIDEA.

#### ANALYTICAL KEY TO THE FAMILIES OF ONISCOIDEA.

a. Inner antennæ with one to two articles. Pleopoda in five pairs; those of first pair wanting; those of the second, third, fourth, and fifth segments have a single branch, all branchial; the branch of the first segment, however, in the male, is produced on the inside in a long compressed stylet; pleopoda of the sixth segment form an inferior operculum.

Family XVIII. TYLIDES (p. 561).

a'. Inner antennæ with three articles. Pleopoda in six pairs, all double branched. External branch of the first five pairs opercular in character. Internal branch branchial, in the male, however, of the first and second pairs sexual.



b. Buccal mass not very prominent below. First maxillæ have two plumose setæ on the inner plate. Mandibles with molar expansion obsolete, without any triturating surface, it being replaced by brushlike recurved setæ.

c. External antennæ generally long, close together, with antennal openings large. Body as a rule scarcely able to be contracted into a ball. Head less manifestly immersed in first thoracic segment. Lateral parts of the head separated by a vertical marginal and inframarginal line. Clypeus arched. Legs generally long. Uropoda produced, reaching beyond the terminal segment of the abdomen and the preceding segment. Terminal segment narrower than preceding ones and usually conically produced at end.

Family XIX. ONISCIDÆ (p. 561).

c'. External antennæ generally short, with antennal openings small. Body able to be contracted into a ball. Head immersed in first thoracic segment. Lateral parts of the head undifferentiated. Clypeus perpendicular. Legs generally short. Uropoda short, not reaching beyond the terminal segment of the abdomen or the preceding segment. Terminal segment short and broad . . . . . Family XX. ARMADILLIDÆ (p. 569).

b'. Buccal mass prominent. First maxillæ have three plumose setæ on the inner plate. Mandibles with molar expansion large and broad, exhibiting a finely fluted triturating surface.

c. Head without any lateral lobes, frontal part rounded. Eyes well developed or wanting. Inner antennæ with last joint very small and without distinctly developed sensory filaments. Posterior maxillæ with two thick hairy bristles. Maxillipeds with terminal part distinctly five-articulate, masticatory lobe truncate at tip, epignath short. External sexual appendages in male double. Inner branches of first pair of pleopoda of a similar structure in both sexes, that of second pair in male terminating in long stylet. Both branches of uropoda styliform . . . . . Family XXI. LIGIDÆ (p. 574).

c'. Head with distinct, though not very large, lateral lobes, front more or less produced. Eyes small or wanting. Inner antennæ with last joint well developed and tipped with a number of delicate sensory filaments. Posterior maxillæ without any bristles. Maxillipeds with terminal part generally imperfectly articulated, masticatory lobe terminating in a thin lash, epignath narrow, linguiform. Sexual appendage of male simple; inner branch of both first and second pairs of pleopoda transformed for copulative purposes. Uropoda with branches conically tapered.

Family XXII. TRICHONISCIDÆ (p. 575).

### Family XVIII. TYLIDÆ.

#### 59. TYLOS Latreille.

#### 138. TYLOS NIVEUS Budde-Lund.

*Tylos niveus* BUDDE-LUND, Crust. Terrestria, 1885, pp. 278, 279.

*Habitat*.—Key West, Florida.

### Family XIX. ONISCIDÆ.

#### ANALYTICAL KEY TO THE GENERA OF ONISCIDÆ.

- a. External opercular ramus of the abdominal appendages containing no special respiratory organ. Flagellum of external antennæ triarticulate.
- b. Epimera of thoracic segments large, with all the posterior angles acute. Abdomen not abruptly narrower than thorax. First two abdominal segments very short, three following ones large, with large acute epimera.

- c. Terminal segment of body conically produced. Basal joint of uropoda oblong. Inner branches not contiguous along their inner lateral margins. 60. *Oniscus*.
- c'. Terminal segment of body short, widely rounded posteriorly. Basal joint of uropoda broadly expanded inside. Inner branches contiguous along their inner lateral margins. 61. *Synuropus*, new genus.
- b'. Epimera of thoracic segments small. Abdomen abruptly narrower than thorax; first two segments generally equal in length to those following; epimera very small, but manifest. 62. *Philoscia*.
- a'. External opercular ramus of the first and second pairs of abdominal appendages furnished with trachee.
- b. Flagellum of external antennæ biarticulate.
- c. Abdomen not abruptly narrower than thorax. Epimera of abdominal segments large.
- d. Body very convex, capable of being rolled up into a perfect ball. Articles of flagellum of external antennæ subequal. Last abdominal segment reaching very little beyond the epimera of the preceding segment. External branches of the uropoda equal in both sexes. External opercular ramus of all the abdominal appendages furnished with tracheæ. 63. *Cylisticus*.
- d'. Body more or less depressed, with lateral parts lamellarly expanded. Articles of flagellum of external antennæ with the first article generally longer than the second, often subequal, or even a little shorter. Last abdominal segment generally not reaching beyond the epimera of the preceding segment. External branches of the uropoda longer in the male than in the female. External opercular ramus of the first and second pairs of abdominal appendages, and in some species of all the pairs, furnished with tracheæ. 64. *Porcellio*.
- c'. Abdomen abruptly narrower than thorax. Epimera of abdominal segments small.
- d. First article of flagellum of external antennæ generally longer than second. Last abdominal segment reaches sufficiently beyond the epimera of the preceding segment. External opercular ramus of the first and second pairs of abdominal appendages, rarely of the third or of all the pairs, furnished with tracheæ. 65. *Metoponorthus*.
- d'. Flagellum of external antennæ with the first article shorter than the second. Last abdominal segment reaches much beyond the epimera of the preceding segment. External opercular ramus of the first and second pairs of abdominal appendages furnished with tracheæ. 66. *Rhyscotus*.
- b'. Flagellum of external antennæ quadri-articulate. 67. *Acanthoniscus*.

## 60. ONISCUS Linnæus.

## ANALYTICAL KEY TO THE SPECIES OF ONISCUS.

- a. Caudal segment a little shorter than inner branches of the uropoda. 139. *Oniscus asellus* Linnæus.
- a'. Caudal segment exactly equal to the inner branch of the uropoda. 140. *Oniscus affinis* Say.

## 139. ONISCUS ASELLUS Linnæus.

*Oniscus asellus* LINNÆUS, Fauna Suecica, 2d ed, p. 500.

*Oniscus murarius* CUVIER, Jour. Hist. Nat., II, p. 23, pl. xxvi, figs. 11-13.—

BUDDE-LUND, Crust. Isop. Terrestria, 1885, pp. 202-204.

*Oniscus asellus* G. O. SARS, Crust. of Norway, II, Pts. 9, 10, 1897, p. 171, 172.

*Habitat*.—Greenland; North America at Woods Hole, Massachusetts, and Providence, Rhode Island; also Sweden; Denmark; Germany; Holland; Great Britain; France; Spain; Italy; Azores; Iceland; and coast of Norway.

140. *ONISCUS AFFINIS* Say.

*Oniscus affinis* SAY, Jour. Ac. Nat. Sci. Phila., I, 1818, p. 430-431.

*Oniscus vicarius* STUXBERG, Öfvers. Svenska Vet. Acad. Forh., 1872, Pt. 9, p. 3, and 1875, Pt. 2, p. 50.

*Habitat*.—North America.

61. *SYNUROPUS*, new genus.

Body oval, not contractile into a ball, with the segments laterally expanded, as in *Oniscus*.

Head with lateral and frontal lobes. Antennæ with flagellum containing three joints.

Abdomen not narrower than thorax; abdominal epimera large.

Terminal segment of body much broader than long, widely rounded posteriorly, not conically produced as in *Oniscus*. Basal joint of the uropoda large, broadly expanded inside, not oblong as in *Oniscus*; inner branches close together, their internal lateral margins contiguous. Outer branch somewhat longer than inner branch.

141. *SYNUROPUS GRANULATUS*, new species.

Body oval, not able to be contracted into a ball, with the lateral parts of the segments expanded.

Entire surface of body covered with small tubercles.

Head deeply set in first thoracic segment, whose rounded anterior angulations reach the antero-lateral angles of the head. The anterior margin of the head is produced in an obtusely pointed median lobe. The lateral lobes are very acute.

The antennæ are geniculate at the articulation of the fourth and fifth peduncular joints; the flagellum contains three joints.

The first thoracic segment is longest; the others subequal. The abdomen is not narrower than the thorax. The first two segments have their lateral margins concealed. The following three have their lateral margins broadly expanded. The terminal segment is twice as broad as long, with the posterior margin

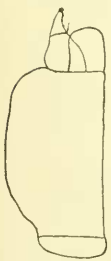


FIG. 31.—MAXILLIPED.

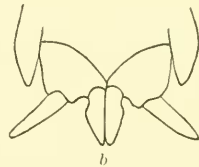
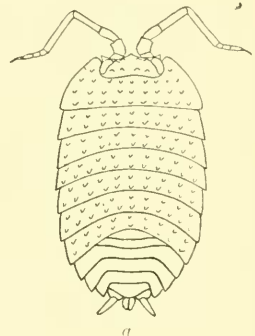


FIG. 30.—*SYNUROPUS GRANULATUS*. a, DORSAL VIEW; b, UROPODA.

broadly rounded. The basal joints of the uropoda are large, being partly covered by the terminal segment of the body. The outer branch is styliform and extends its entire length beyond the terminal abdominal segment. The inner branches are situated close together in such a way that the inner lateral margins are continuous throughout their length.

The legs are ambulatory, similar, and subequal.

Color brown, mottled with black.

One specimen was collected by Dr. L. Stejneger at El Yunque, Porto Rico, at an altitude of 2,800 feet.

*Type*.—Cat. No. 23912, U.S.N.M.

## 62. PHILOSCIA Latreille.

### ANALYTICAL KEY TO THE SPECIES OF PHILOSCIA.

- a.* Body smooth, without spines.  
*b.* Terminal segment of body broadly rounded posteriorly. 142. *Philoscia richmondi*, new species.  
*b'*. Terminal segment of body posteriorly triangular, with apex more or less produced.  
*c.* Body striped with two broad dorsal bands ..... 143. *Philoscia vittata* Say.  
*c'*. Body not striped, but spotted with numerous spots.  
*d.* Frontal marginal line straight, color varying from black to brown, with white spots ..... 144. *Philoscia nigricans* Budde-Lund.  
*d'*. Frontal marginal line produced in the middle, a little arcuate, color violet, with white spots ..... 145. *Philoscia brevicornis* Budde-Lund.  
*a'*. Body with numerous spines above ..... 146. *Philoscia spinosa* Say.

### 142. PHILOSCIA RICHMONDI, new species.

Body oval; surface smooth. Head not set in first thoracic segment, evenly rounded, with no lateral or frontal lobes. Eyes large, well developed, lateral. Antennæ equal to half the length of the body; flagellum composed of three joints.

Segments of thorax subequal.

Abdomen abruptly narrower than thorax, with the lateral processes of the segments not projecting. Terminal segment equal in length to the preceding segment, much broader than long,

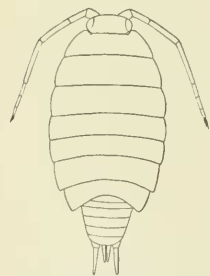


FIG. 32.—PHILOSCIA RICHMONDI.

and with the posterior margin broadly rounded. The basal joint of the uropoda projects beyond the terminal segment of the body. The inner branch extends to the middle of the outer branch.

Legs gradually increasing in length.

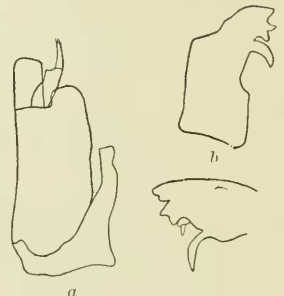


FIG. 33.—*a*, MAXILLIPED; *b*, MANDIBLE.

Color, mottled brown and yellow.

A number of specimens were collected by Dr. C. W. Richmond and Dr. L. Stejneger at El Yunque, Porto Rico, at an altitude of 2,800 feet.

*Type*.—Cat. No. 23913, U.S.N.M.

143. *PHILOSCIA VITTATA* Say.

*Philoscia vittata* SAY, Jour. Acad. Nat. Sci. Phila., 1, 1818, p. 429.—DE KAY, Zool. N. Y. Crust., 1844, p. 50.—WHITE, List Crust. Brit. Mus., 1847, p. 99.—HARGER, Rep. U. S. Fish Comm., Pt. 1, for 1874, p. 569 (275); Proc. U. S. Nat. Mus., II, 1879, p. 157; Rep. U. S. Fish Comm., 1880, Pt. 6, p. 306-307, pl. 1, fig. 1. (See Harger for synonymy.)

*Habitat*.—Great Egg Harbor, New Jersey, to Barnstable, Massachusetts.

Budde-Lund<sup>1</sup> suggests that this species is very likely not distinct from *P. muscorum*.

144. *PHILOSCIA NIGRICANS* Budde-Lund.

*Philoscia nigricans* BUDDE-LUND, Crust. Isop. Terrestria, 1885, pp. 210, 211.

*Habitat*.—Biloxi, Mississippi.

145. *PHILOSCIA BREVICORNIS* Budde-Lund.

*Philoscia brevicornis* BUDDE-LUND, Crust. Isop. Terrestria, 1885, pp. 218, 219.

*Habitat*.—Biloxi, Mississippi.

146. *PHILOSCIA SPINOSA* Say.

*Philoscia spinosa* SAY, Jour. Ac. Nat. Sci. Phil., 1, 1818, pp. 429, 430.

*Habitat*.—Savannah, Georgia.

63. *CYLISTICUS* Schnitzler.

147. *CYLISTICUS CONVEXUS* (De Geer).

*Oniscus convexus* DE GEER, Mém. des Insectes, VII, p. 553, pl. xxxv, fig. 11.

*Porcellio spinifrons* BRANDT, Bull. de la Soc. Imp. d. Naturalistes de Moscou, VI, 1833, p. 15.

*Porcellio laevis* KOCH, Deutschl. Crust., p. 6.

*Porcellio armadilloides* LEREBOLLET, Mém. de la Soc. du Muséum d' Histoire Nat. de Strasbourg, IV, 1853, p. 65, pl. 1, fig. 18; pl. III, figs. 88-94.

*Cylisticus laevis* SCHNITZLER, De Onisc., 1853, p. 25.

(?) *Cylisticus spinifrons* SCHNITZLER, De Onisc., 1853, p. 25.

(?) *Porcellio glaber* FITCH, Rep. Noxious Ins., p. 119.

*Porcellio armadilloides* KINAHAN, Dubl. Nat. Rev., IV, p. 279.

*Porcellio laevis* AM. STEIN, Jahresbericht d. Natur. Forschenden Gesellschaft Graubündens, 1857, p. 112.

*Porcellio convexus* JOHNSON, Sver. Onisc., 1858, p. 32.

*Porcellio armadilloides* BATE and WESTWOOD, Brit. Sessile-eyed Crust., II, p. 485.

*Porcellio convexus* BUDDE-LUND, Nat. Tidsskr., (3), VII, p. 240.

*Porcellio convexus* STUXBERG, Öfvers. af Kgl. Vetenskaps Akad. Förh., 1875, p. 60.

<sup>1</sup>Crust. Isop. Terrestria, 1885, p. 209.

*Cylisticus convexus* BUDDE-LUND, Crust. Isop. Terrestria, 1885, pp. 77-79 (see Budde-Lund for synonymy).—G. O. SARS, Crust. of Norway, II, pls. XI, XII, 1897, p. 186.

*Habitat.*—North America; also Sweden; Denmark; British Isles; Germany; Bohemia; Holland; Belgium; France; Turkey; and coast of Norway.

#### 64. PORCELLIO Latreille.

##### ANALYTICAL KEY TO THE SPECIES OF PORCELLIO.

- a. Surface of body smooth. Inner face of the right mandible with six to seven penicils, of the left mandible with seven to nine penicils. Frontal lateral lobes of head of moderate size, rounded..... 148. *Porcellio lævis* Latreille.
- a'. Surface of body roughly granulate or tuberculate.
- b. Inner face of the mandibles with four to five penicils. Body with spots.
- c. Third joint of peduncle of second pair of antennæ furnished with a small apical tooth. Frontal lateral lobes of moderate size. Color varying from gray to black, with three longitudinal lines of white spots. Flagellum with joints subequal, or first shorter than second..... 149. *Porcellio rathkei* Brandt.
- c'. Second joint of peduncle of second pair of antennæ furnished with large apical tooth. Frontal lateral lobes large. Color, yellow; body spotted with black; spots arranged in longitudinal lines. Flagellum with first joint a little longer than second joint..... 150. *Porcellio spinicornis* Say.
- b'. Inner face of right mandible with four to five penicils, of left mandible with seven to eight penicils. Frontal lateral lobes of head large, oblique. Body without spots..... 151. *Porcellio scaber* Latreille.

#### 148. PORCELLIO LÆVIS Latreille.

*Porcelliolævis* LATREILLE, Hist. Crust. Ins., VII, p. 46; Gen. Crust., I, p. 71.—LEACH, Edinb. Encycl., VII, p. 406; Transact., XI, p. 375.

*Oniscus lævis* LAMARCK, Hist. Nat. An. s. Vert., V, p. 154; 2d ed., V, p. 261.

(?) *Porcellio lævis* RISSO, Crust. Nice, p. 156; Hist. Nat., pp. 119, 163.—DESMAREST, Consid., p. 321.

(?) *Porcellio degeerii* AUDOUIN and SAVIGNY, Descript. de l'Égypte, p. 289, pl. XIII, fig. 5.

*Porcellio cucercus* BRANDT, Bull. Soc. Imp. d. Moscou, VI, 1833, p. 177.—MILNE-EDWARDS, Hist. Nat. des Crust., III, p. 168.

*Porcellio syriacus* BRANDT, Bull. Soc. Imp. d. Moscou, VI, 1833, p. 178.—MILNE-EDWARDS, Hist. Nat. des Crust., III, p. 170.

*Porcellio musculus* BRANDT, Bull. Soc. Imp. d. Moscou, VI, 1833.

*Porcellio cinerascens* BRANDT, Bull. Soc. Imp. d. Moscou, VI, 1833, p. 178.

*Porcellio dubius* BRANDT, Bull. Soc. Imp. d. Moscou, VI, 1833, p. 178.—MILNE-EDWARDS, Hist. Nat. des Crust., III, p. 170.

*Porcellio poeyi* GUÉRIN, Comptes Rendus, 1837, p. 132.

*Porcellio lævis* MILNE-EDWARDS, Hist. Nat. des Crust., III, p. 169; Règne an., Planch., p. 71 bis, fig. 2.

*Porcellio urbicus* KOCH, Deutsch. Crust., p. 36.

*Porcellio degeerii* BRANDT, Wagner Reise Alg., III, 1836, p. 278.

*Porcellio ovatus* ZADDACH, Synops., p. 13.

*Porcellio flavipes* KOCH, Berichtig, etc., p. 206, pl. VIII, fig. 97.

*Porcellio degeerii* LUCAS, Expl. d'Alg., I, pp. 69, 139.

*Porcellio lævis* LEREBOLLET, Mém. de la Soc. de Strasbourg, IV, p. 45, pl. I, fig. 7; pl. III, figs. 55-60.

*Porcellio poeyi* GUÉRIN, Ramon de la Sagra, Crust., p. 67.—SAUSSURE, Mém. Soc. phys. Genève, XIV, 1858, p. 477, pl. v, fig. 34.



- Porcellio cubensis* SAUSSURE, Mém. Soc. phys. Genève, XIV, 1858, p. 477, pl. v, fig. 35.
- Porcellio sumichrasti* SAUSSURE, Mém. Soc. phys. Genève, XIV, 1858, p. 478, pl. v, fig. 36.
- Porcellio cotillar* SAUSSURE, Mém. Soc. phys. Genève, XIV, 1858, p. 478, pl. v, fig. 37.
- Porcellio mexicanus* SAUSSURE, Mém. Soc. phys. Genève, XIV, 1858, p. 479, pl. v, figs. 39, 40.
- Porcellio aztecus* SAUSSURE, Mém. Soc. phys. Genève, XIV, 1858, p. 479, pl. v, fig. 38.
- Porcellio interruptus* HELLER, Verh. Zool. Bot. Ges. Wien, XI, p. 495; Novara Exp., p. 136, p. 12, fig. 6 (not adult).
- Porcellio larvis* PLATEAU, Crust. Isop., p. 10.—BUDDÉ-LUND, Nat. Tidskrift., 3d ser., VII, p. 236.
- Porcellio aztecus* MIERS, Proc. Zool. Soc. Lond., 1877, p. 669.
- Porcellio larvis* ULLANIN Crust. Turkest., p. 17, pl. 4, figs. 1-10.—BUDDÉ-LUND, Crust. Isop. Terrestria, 1885, pp. 138-141. (See Budde-Lund for synonymy.)

*Habitat.*—Distribution world-wide.

149. *PORCELLIO RATHKEI* Brandt.

- Porcellio rathkei* BRANDT, Bull. de la soc. Imp. d. Naturalistes de Moscou, VI, 1833, p. 15.—MILNE-EDWARDS, Hist. des Crust., III, p. 170.
- Porcellio ferrugineus* BRANDT, Bull. de la soc. Imp. d. Naturalistes de Moscou, VI, 1833, p. 16.—MILNE-EDWARDS, Hist. des Crust. III, p. 170.
- Porcellio trilineatus* KOCH, Deutschl. Crust., p. 34.
- Porcellio trivittatus* LEREBoullet, Mém. de la Soc. de muséum nat. de Strasbourg, IV, 1853, p. 54, pl. I, figs. 13, 14; pl. III, figs. 66-70.
- Porcellio tetramoerus* SCHNITZLER, De Onisc, p. 24.
- Porcellio striatus* SCHNITZLER, De Onisc, p. 24.
- Porcellio trilineatus* SILL, Verhandl. n. Mittheilungen des Siebenbürgischen Vereins für Naturwissenschaften zu Hermannstadt, XIII, 1862, p. 26.
- Porcellio trivittatus* JOHNSON, Sver. Onisc., p. 25.
- Porcellio trilineatus* BUDDÉ-LUND, Nat. Tidskr. (3), VII, p. 239.—STÜXBERG, Öfvers. af Kgl. Vetenskaps Akad. Forh., 1875, p. 59.
- Porcellio rathkei* BUDDÉ-LUND, Crust. Isop. Terrestria, 1885, pp. 85-87. (See Budde-Lund for synonymy.)

*Habitat.*—East coast of North America; Syracuse, New York; Providence, Rhode Island; Lawrence, Massachusetts; also Europe.

150. *PORCELLIO SPINICORNIS* Say.

- Porcellio spinicornis* SAY, Jour. Ac. Nat. Sci. Phila., I, 1818, pp. 431, 432.
- Porcellio pictus* BRANDT and RATZEBURG, Med. Zool., II, p. 78, pl. XII, figs. 5, 5e, 5f.
- Porcellio melanocephalus* KOCH, Deutschl. Crust., p. 28.
- (?) *Porcellio spinicornis* DE KAY, Zool. N. York, VI, p. 51.
- Porcellio mixtus* FITCH, Rep. noxious ins., p. 120.
- Porcellio pictus* KINAHAN, Nat. Hist. rev., IV, p. 278.—BATE and WESTWOOD, Brit. Sess. Crust., II, p. 480.—BUDDÉ-LUND, Nat. Tidskr. (3), VII, p. 239; Crust. Isop. Terrestria, 1885, pp. 123-125.—G. O. SÆRS, Crust. of Norway, II, Pts. 9, 10, 1897, pp. 177, 178.

*Habitat.*—North America, at New York, Niagara; Goshen, Connecticut; also Sweden; Denmark; Germany; Britain; France; Hungary; Russia; coast of Norway.

## 151. PORCELLIO SCABER Latreille.

- Porcellio scaber* LATREILLE, Hist. Crust. Ins., VII, p. 45; Gen. Crust., I, p. 70.—LEACH, Edin. Encycl., VII, p. 406.
- Oniscus granulatus* LAMARCK, Hist. Nat. des Animaux sans Vertèbres, V, p. 154; 2d ed., V, p. 261.
- Porcellio scaber* RISSO, Crust. de Nice, p. 155; Hist. Crust., p. 119.
- Porcellio nigra* SAY, Journ. Acad. Nat. Sci., Phila., I, 1818, p. 432.
- Porcellio granulatus* BRÉBISSON, Mém. Soc. Calv., 1825, p. 261.
- Porcellio scaber* DESMAREST, Consid. Crust., p. 321.—BRANDT and RATZEBURG, Med. Zool., II, p. 77, pl. XII, figs. 1-4 and A-B.—BRANDT, Bull. Soc. Imp. d. Naturalistes de Moscou, VI, 1833, p. 176.
- Porcellio brandtii* MILNE-EDWARDS, Hist. Nat. des Crust., III, p. 168.
- Porcellio granulatus* MILNE-EDWARDS, Hist. Nat. des Crust., III, p. 169, pl. XXXII, fig. 21.
- Porcellio scaber* MILNE-EDWARDS, Cuvier Rg. An., 1849, pls. LXXI-LXXI bis.
- Porcellio nigra* GOULD, Rep. Crust., p. 337.
- Porcellio scaber* KOCH, Deutschland's Crust., p. 34.
- Porcellio dubius* KOCH, Deutschland's Crust., p. 34.
- Porcellio asper* KOCH, Berichtig., p. 207, pl. VIII, fig. 98.
- Porcellio scaber* LEREBoulLET, Mém. Strasb., IV, p. 34, pl. 1, figs. 4, 5; pl. II, figs. 43-47.
- Porcellio gemmulatus* DANA, Crust. U. S. Expl. Exp., 1853, p. 725, pl. XLVII, fig. 7.—STIMPSON, Journ. Bos. Soc. Nat. Hist., VI, p. 66.
- Philoscia tuberculata* STIMPSON, Proc. Cal. Acad. Sci., I, p. 89.
- Porcellio scaber* SILL, Crust. Lieb., 1861, p. 3.—BATE and WESTWOOD, Brit. Crust., II, p. 475.
- Porcellio paulenses* HELLER, Novara Exp., p. 136, pl. XII, fig. 5.
- Porcellio scaber* PLATEAU, Bull. Acad. Belgique, 2d ser., XXIX, 1870, No. 2, p. 8.—E. BRANDT, Horæ Soc. Ent. Rossi, VIII, p. 167.—BUdde-LUND, Nat. Tidsskrift, 3d ser., VII, p. 238; Prospectus, p. 3.—Bos, Crust. Hedrioph. Nederl., pp. 38, 91.—BUdde-LUND, Crust. Isop. Terrestria, 1885, pp. 129-131. (See Budde-Lund for synonymy.)

*Habitat*.—Greenland; Newfoundland; Grand Manan; Lawrence, Massachusetts; West Haven, Connecticut; New York; Ocean Grove, New Jersey; Woodside, Maryland; Bloomington, Illinois; Niagara; San Francisco and Colfax, California; San Pedro, Mexico; St. Paul Island; St. Croix; Ascension Island; also Kamchatka; Iceland; Cape of Good Hope; all Europe.

## 65. METOPONORTHUS Budde-Lund.

## ANALYTICAL KEY TO THE SPECIES OF METOPONORTHUS.

- a*. Inner face of right mandible with four to five penicils, of left mandible with six penicils. Second and third joints of peduncle of second pair of antennæ furnished with a small apical tooth; first joint of flagellum much longer than second joint. No middle frontal lobe. Color, brown or reddish brown.
152. *Metoponorthus pruinosus* (Brandt).
- a'*. Inner face of right mandible with four penicils, of left mandible with five penicils. Second and third joints of peduncle of second pair of antennæ without small apical tooth; first joint of flagellum shorter than second. Middle frontal lobe small, widely rounded. Color from gray to black, with three longitudinal lines of white spots. . . . 153. *Metoponorthus virgatus* Budde-Lund.

## 152. METOPONORTHUS PRUINOSUS (Brandt).

(?) *Asellus minor* H. SLOANE, Voyage to Jamaica, Lond., II, 1725, p. 199.

*Porcellio pruinus* BRANDT, Bull. de la Soc. Imp. d. Naturalistes de Moscou, p. 19.

(?) *Porcellio truncatus* M. EDWARDS, Hist. des Crust., III, p. 171.

*Porcellio maculicornis* KOCH, Deutschl. Crust., p. 34.

*Porcellio frontalis* LEREBoulLET, Mém. Clop., p. 63, pl. I, fig. 17; pl. III, figs. 81-87.

*Porcellio zealandicus* WHITE, List. Crust. Brit. Mus., 1847, p. 99.

(?) *Porcellio immaculatus* FITCH, Rep. Nox. Ins., p. 120.

*Porcellionides flavo-vittatus* MIERS, Proc. Zool. Soc. Lond., 1877, p. 669, pl. LXVIII, fig. 4.

(?) *Porcellio jelskii* MIERS, Proc. Zool. Soc., Lond., 1877, p. 668, pl. LXVIII, fig. 3.

*Metoponorthus pruinus* BUDDE-LUND, Crust. Isop. Terrestria, 1885, pp. 169-171.

(See Budde-Lund for synonymy.)

*Habitat.*—North and South America; Europe; North Africa, etc.

## 153. METOPONORTHUS VIRGATUS Budde-Lund.

*Metoponorthus virgatus* BUDDE-LUND, Crust. Isop. Terrestria, 1885, p. 182.

*Habitat.*—Florida; Nova Aurelia.

## 66. RHYSCOTUS Budde-Lund.

## 154. RHYSCOTUS TURGIFRONS (Budde-Lund).

*Stenomacrus turgifrons* BUDDE-LUND, Prosp., p. 5.

*Rhyscotus turgifrons* BUDDE-LUND, Crust. Isop. Terrestria, 1885, p. 192.

*Habitat.*—St. Jean, West Indies.

## 67. ACANTHONISCUS (White) Kinahan.

## 155. ACANTHONISCUS SPINIGER White.

*Acanthoniscus spiniger* WHITE, List. Crust. Brit. Mus., 1847, p. 99.—GOSSE, A Naturalist's Sojourn in Jamaica, Lond., 1851, p. 65.—KINAHAN, Proc. Dubl. Univ., I, p. 197, pl. XIX, fig. 4.—BUDDE-LUND, Crust. Isop. Terrestria, 1885, pp. 241, 242.

*Habitat.*—Jamaica.

## Family XX. ARMADILLIDIDÆ.

## ANALYTICAL KEY TO THE GENERA OF ARMADILLIDIDÆ.

- a. Outer branch of the uropoda very small or minute. Basal joint large.
- b. Flagellum of external antennæ with two or three joints.
- c. Flagellum with two joints.
- d. Eyes small. First thoracic segment with coxopodites not distinct from segments on upper side. Caudal segment posteriorly truncate.
- e. Last abdominal segment subtetragonal, base wider than apex, more or less contracted in the middle. External branch of the uropoda inserted in the middle of the internal lateral margin of the basal joint. Coxopodites of first and second segments not distinct from segments (underside) ..... 68. *Cubaris*.

- c'*. Last abdominal segment trapezoidal or subcordiform, narrower at its truncate apex. External branch of the uropoda inserted in the inner post-lateral angle of the basal joint. Coxopodites of the first and second segments distinct (underside)..... 69. *Pseudarmadillo*.
- d'*. Eyes large. First thoracic segment with coxopodites well developed and distinct on the upper surface, where they form on each side of the segment a very large marginal border. Caudal segment obtuse and rounded at apex. Basal joint of uropoda occupying all the space between the caudal segment and preceding one. Inner branch does not reach the apex of last segment; outer branch terminal, styloform, and very small..... 70. *Mesarmadillo*.
- e'*. Flagellum with three joints. Coxopodites of first segment usually distinct on underside. Terminal segment of body very short, rounded posteriorly. External branch of the uropoda inserted in the inner post-lateral angle of the quadrangular basal joint, and extends downward. Inner branch reaches much beyond terminal segment of body.  
71. *Sphaeroniscus*.
- b'*. Flagellum of external antennæ with a single joint only. Coxopodite distinct on first segment (underside). External branch of the uropoda inserted at inner post-lateral angle of basal joint..... 72. *Haplarmadillo*.
- a'*. Outer branch of uropoda large, flattened lamellar, inserted at apex of basal joint.  
73. *Armadillidium*.

## 68. CUBARIS Brandt.

## ANALYTICAL KEY TO THE SPECIES OF CUBARIS.

- a*. Body tuberculate.
- b*. Second thoracic segment without a distinct coxopodite.
- c*. Coxopodite of first thoracic segment hardly perceptible as a very small process below the leg. Prosepistoma of head with a shield-like convexity. Apex of telson half as wide as basis. Endopodite of the uropoda extending one-half the length of the telson.  
156. *Cubaris tenuipunctatus* (Dollfus).
- c'*. Coxopodite of first thoracic segment hardly perceptible, only a feeble ridge. Prosepistoma of head nearly plain. Apex of telson one-third narrower than basis. Endopodite of the uropoda extending two-thirds the length of the telson..... 157. *Cubaris depressus* (Dollfus).
- b'*. Second thoracic segment with a distinct coxopodite (underside).
- c*. Coxopodite of the first thoracic segment distant from the edge, crested, and ended by a tooth-like diverging process.  
158. *Cubaris viticola* (Dollfus).
- c'*. Coxopodite of the first thoracic segment not distant from the edge and not crested.
- d*. Coxopodite of the first thoracic segment distinct along the entire length of the edge (underside).
- e*. Coxopodite of the first segment divergent on the half hind part. Coxopodite of the second segment forming a tooth-like diverging process.  
159. *Cubaris silvarum* (Dollfus).
- e'*. Coxopodite of the first segment not divergent. Coxopodite of the second segment large, square-shaped... 160. *Cubaris perlatus* (Dollfus).
- d'*. Coxopodite of the first thoracic segment not distinct along the entire length of the edge:
- e*. Coxopodite of the first segment small, dentiform, and very unequally cleft..... 161. *Cubaris murinus* Brandt.
- e'*. Coxopodite of the first segment not dentiform, subequally cleft.  
162. *Cubaris cinctus* (Dollfus).

*a'*. Body smooth.

*b*. Upper surface of terminal segment of body with a shallow depression on each side, and a small median pit near the base. 163. *Cubaris gigus* Miers.

*b'*. Upper surface of terminal segment of body without shallow depression on each side, or median pit.

*c*. Coxopodite distinct on the entire length of the lateral edge of the first thoracic segment (underside). 164. *Cubaris zigzag* (Dollfus).

*c'*. Coxopodite not distinct on the entire length of the lateral edge of the first thoracic segment.

*d*. Second thoracic segment with a large square coxopodite, distinct on its total length (underside). 165. *Cubaris dumorum* (Dollfus).

*d'*. Second thoracic segment with the coxopodite very small.

*e*. Coxopodite of the second segment forming a tooth-like process. Telson with a blunt double tubercle near the base.

166. *Cubaris grenadensis* (Budde-Lund).

*e'*. Coxopodite of the second thoracic segment not tooth-like. Telson smooth above. 167. *Cubaris pisum* (Budde-Lund).

#### 156. CUBARIS TENUIPUNCTATUS (Dollfus).

*Armadillo tenuipunctatus* DOLLFUS, Proc. Zool. Soc. Lond., 1896, p. 389.

*Habitat*.—Mustique Island, West Indies.

#### 157. CUBARIS DEPRESSUS (Dollfus).

*Armadillo depressus* DOLLFUS, Proc. Zool. Soc. Lond., 1896, p. 390.

*Habitat*.—St. Vincent, Chateaubelais, West Indies.

#### 158. CUBARIS VITICOLA (Dollfus).

*Armadillo viticola* DOLLFUS, Proc. Zool. Soc. Lond., 1896, pp. 396, 397.

*Habitat*.—Grenada; Balthazar; Chantilly, West Indies.

#### 159. CUBARIS SILVARUM (Dollfus).

*Armadillo silvarum* DOLLFUS, Proc. Zool. Soc. Lond., 1896, pp. 393, 394.

*Habitat*.—St. Vincent, Chateaubelais; Cumberland Valley, West Indies.

#### 160. CUBARIS PERLATUS (Dollfus).

*Armadillo perlatus* DOLLFUS, Proc. Zool. Soc. Lond., 1896, pp. 395, 396.

*Habitat*.—St. Vincent, West Indies.

#### 161. CUBARIS MURINUS Brandt.

*Cubaris murina* BRANDT, Bull. de la Soc. Imp. d. Naturalistes de Moscou VI, 1833, p. 28.

*Cubaris brunnea* BRANDT, Bull. de la Soc. Imp. d. Naturalistes de Moscou, VI, p. 28.

*Armadillo murinus* MILNE-EDWARDS, Hist. des Crust., III, p. 179.

*Armadillo brunnea* MILNE-EDWARDS, Hist. des Crust., III, p. 179.

*Armadillo cubensis* SAUSSURE, Mém. de la Soc. de Physique et d'Hist. nat. de Genève, XIV, 1858, Pt. 2, p. 65.

*Cubaris affinis* MIERS, Proc. Zool. Soc., 1877, p. 666, pl. LXVIII, fig. 4.

*Armadillo conglobator* BUDDE-LUND, Prosp., p. 7.

*Armadillo murinus* BUDDE-LUND, Prosp., p. 7, Crust. Isop. Terrestria, 1885, pp. 27, 28. (See Budde-Lund for synonymy.)

*Habitat*.—Porto Rico; Cuba; St. Thomas; Jamaica; also Oahu; Brazil; Cayenne; Seychelle Islands; Sumatra.

## 162. CUBARIS CINCTUS (Dollfus).

*Armadillo cinctus* DOLLFUS, Proc. Zool. Soc. Lond., 1896, p. 392.

*Habitat*.—Near Layon, West Indies.

## 163. CUBARIS GIGAS Miers.

*Cubaris gigas* MIERS, Proc. Zool. Soc. Lond., 1877, p. 666, pl. LXVIII, fig. 1.

*Armadillo gigas* BUDE-LUND, Crust. Isop. Terrestria, 1885, p. 40.

*Habitat*.—Nicaragua, near San Juan.

## 164. CUBARIS ZIGZAG (Dollfus).

*Armadillo zigzag* DOLLFUS, Proc. Zool. Soc. Lond., 1896, pp. 394, 395.

*Habitat*.—St. Vincent, West Indies.

## 165. CUBARIS DUMORUM (Dollfus).

*Armadillo dumorum* DOLLFUS, Proc. Zool. Soc. Lond., 1896, p. 391.

*Habitat*.—Mustique Island, West Indies.

## 166. CUBARIS GRENADENSIS (Budde-Lund).

*Armadillo grenadensis* BUDE-LUND, Entomol. Meddelel, 1893, p. 115.—DOLLFUS, Proc. Zool. Soc. Lond., 1896, pp. 392, 393.

*Habitat*.—Becquia Island; Grenada; Balthazar, West Indies.

167. CUBARIS PISUM (Budde-Lund).<sup>1</sup>

*Armadillo pisum* BUDE-LUND, Crust. Isop. Terrestria, 1885, p. 32.

*Habitat*.—Florida.

## 69. PSEUDARMADILLO Saussure.

## 168. PSEUDARMADILLO CARINULATUS Saussure.

*Pseudarmadillo carinulatus* SAUSSURE, Mém. de la Soc. de Physique et d'Hist. nat. de Genève, XIV, 1858, Pt. 2, p. 67, pl. IV, figs. 43, 43a.—BUDE-LUND, Crust. Isop. Terrestria, 1885, pp. 41, 42.

*Habitat*.—Mexico or Cuba.

## 70. MESARMADILLO Dollfus.

## ANALYTICAL KEY TO THE SPECIES OF MESARMADILLO.

- a. Surface of body smooth, with side parts of thoracic segments (two to seven) and abdominal segments not bent downward.
- b. Prosepistoma plain. Coxopodite of second segment of thorax forming a nearly inconspicuous ridge before leg. Caudal segment triangular; apex pointed. Inner branch of uropoda extending beyond apex of caudal segment.
169. *Mesarmadillo modestus* Dollfus.
- b'. Prosepistoma with a shield-like convexity. Coxopodite of second segment of thorax hardly visible, only a very small dentiform process before leg. Caudal segment flat, with rounded apex. Inner branch of uropoda reaching two-thirds length of caudal segment..... 170. *Mesarmadillo americanus* Dollfus.

<sup>1</sup> Budde-Lund says that he is not sure whether any of the specimens which he had examined were adults.



*a'*. Surface of body slightly granulated, with side parts of thoracic segments (two to seven) and abdominal segments bent downward. Caudal segment with blunt rounded apex. Inner branch of uropoda reaching two-thirds length of caudal segment..... 171. *Mesarmadillo reflexus* Dollfus.

169. **MESARMADILLO MODESTUS** Dollfus.

*Mesarmadillo modestus* DOLLFUS, Proc. Zool. Soc. Lond., 1896, p. 397.

*Habitat*.—St. Vincent, West Indies.

170. **MESARMADILLO AMERICANUS** Dollfus.

*Mesarmadillo americanus* DOLLFUS, Proc. Zool. Soc. Lond., 1896, pp. 397, 398.

*Habitat*.—St. Vincent, West Indies.

171. **MESARMADILLO REFLEXUS** Dollfus.

*Mesarmadillo reflexus* DOLLFUS, Proc. Zool. Soc. Lond., 1896, pp. 398, 399.

*Habitat*.—St. Vincent, West Indies.

71. **SPHÆRONISCUS** Gerstäcker.

172. **SPHÆRONISCUS PORTORICENSIS**, new species.

Body oblong, very convex, contractile into a ball. Surface perfectly smooth. Head set in first thoracic segment; front straight; epistoma forming a triangular shield. Eyes very small. Antennæ with flagellum containing three joints.

First thoracic segment twice as long as head, and longer than any of the other segments. Coxopodites not distinct from segment.

First two abdominal segments with the lateral parts concealed. The three following ones continuing the outline of the body. The terminal segment is twice as broad as long, very short, widely rounded posteriorly. The basal joints of the uropoda are large, square, extending the greater part of their length beyond the terminal segment. The external branch is inserted at the inner post-lateral angle of the basal joint and extends downward. The internal branch extends much beyond the last abdominal segment, is longer than the basal joint of the uropoda, and reaches the tip of the external branch.

Color reddish-brown with markings of yellow.

Four specimens were taken by Dr. C. W. Richmond at El Yunque, Porto Rico, at an altitude of 2,800 feet.

*Type*.—Cat. No. 23914. U.S.N.M.

72. **HAPLARMADILLO** Dollfus.

173. **HAPLARMADILLO MONOCELLATUS** Dollfus.

*Haplarmadillo monocellatus* DOLLFUS, Proc. Zool. Soc. Lond., 1896, p. 400.

*Habitat*.—Richmond Valley, St. Vincent, West Indies.

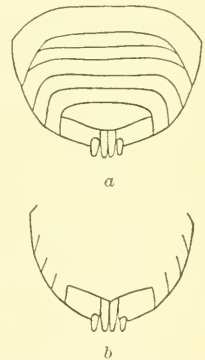


FIG. 34.—SPHÆRONISCUS PORTORICENSIS, *a*. ABDOMEN; *b*. UROPODA (INSIDE).

## 73. ARMADILLIDIUM Brandt.

## 174. ARMADILLIDIUM VULGARE (Latreille).

*Armadillo vulgare* LATREILLE, Hist. Crust., VII, p. 48; Gen. Crust., I, p. 71.

*Armadillo pilularis* SAY, Jour. Ac. Nat. Sci. Phila., I, 1818, p. 432, 433.

*Armadillidium concutatum* BRANDT and RATZBURG, Med. Zool., II, p. 81, pl. XIII, figs. 1, 2, 3, A, B.

*Armadillo trivialis* KOCH, Deutschl. Crust., p. 28.

*Armadillo alter* SCHNITZLER, De Onisc., p. 26.

*Armadillidium vulgare* BUDDE-LUND, 1885, pp. 66-68 (see Budde-Lund for synonymy).

*Habitat.*—Distribution world-wide.

## Family XXI. LIGIDÆ.

## 74. LIGIA Fabricius.

Both branches of uropoda equal in length, styloform, often filiform. Interior mala of the mandibles with numerous penicils. Last segment of body broad, with distinct epimeral plates. Maxillipeds with palp four to five jointed; epignath rounded.

## ANALYTICAL KEY TO THE SPECIES OF LIGIA.

a. External antennæ shorter than body.

b. Uropoda nearly equal to one-third length of body.

175. *Ligia oceanica* (Linnaeus).

b'. Uropoda equal to half the length of body.

176. *Ligia baudiniana* Milne-Edwards.

a'. External antennæ longer than body. Caudal stylets about equal to two-thirds length of body.

b. Tarsus of first pair of feet in the males with a compressed process at apex.

177. *Ligia exotica* Roux.

b'. Tarsus of first pair of feet in males without compressed process at apex, simple.

178. *Ligia ofersii* Brandt.

## 175. LIGIA OCEANICA (Linnaeus).

*Oniscus oceanicus* LINNÆUS, Syst. Nat., 12th ed., II, p. 1061; 13th ed., I, Pt. 5, p. 3012.

*Cymothoa oceanica* FABRICIUS, Mantissa, I, p. 242.

*Ligia oceanica* FABRICIUS, Suppl. Ent. Syst., p. 301.

*Ligia oruscides* BREBISSON, Mém. Soc. Lin. Calv., 1825, p. 259.

*Ligia oceanica* BUDDE-LUND, Crust. Isop. Terrestria, 1885, pp. 259-261.

*Habitat.*—Off Newport, Rhode Island; North Sea; Baltic Sea; Kattegat Sea; Norway; Færøe Islands; coast of Germany; Belgium; Great Britain; France; Spain; Mediterranean Sea.

*Depth.*—Littoral.

## 176. LIGIA BAUDINIANA Milne-Edwards.

*Ligia baudiniana* MILNE-EDWARDS, Hist. des Crust., III, 1840, pp. 155, 156.—MIEIS, Proc. Zool. Soc., 1877, p. 670.

*Ligia baudiana* IVES, Proc. Ac. Nat. Sci. Phila., 1891, pp. 185-186, pl. vi, fig. 2.

*Habitat.*—San Juan d'Ulloa, Vera Cruz; Cuba; Yucatan; also Rio Janeiro; Cayenne.

*Depth.*—Littoral.

177. *LIGIA EXOTICA* Roux.

*Ligia exotica* ROUX, Crust. Médit., p. 3, pl. xiii, fig. 9.

(?) *Ligia grandis* PERRY, Spix and Martius, p. 212, pl. xl, fig. 13.

*Ligia gaudichaudii* MILNE-EDWARDS, Hist. Nat. des Crust., III, p. 157.

(?) *Ligia (Italica) coriacea* KOCH, Deutsch. Crust., p. 36; Berichtig., p. 211.

*Ligia gaudichaudii* DANA, Expl. Exp., p. 741, pl. XLIX, figs. 6a-b.—NICOLET in Gay, Hist. Chile, III, p. 265.

*Ligia exotica* BUDDE-LUND, Crust. Isop. Terrestria, 1885, pp. 266–268.

*Habitat.*—Cedar Keys, Florida; Key West, Pine Key, Florida; St. Jean d'Allao, Mexico; Topolobaupo, Mexico; Panama; Cuba; California; also Chusan; Macao; Rio Janeiro; Bahia; Puntarenas; Chile; Madras; Manila; Luzon; Singapore; Massilia; Espiritu Santo, Balandra Bay, near Point Diablo.

*Depth.*—Littoral.

178. *LIGIA OLFERSII* Brandt.

*Ligia olfersii* BRANDT, Bull. de la Soc. Imp. d. Naturalistes de Moscou, VI, 1833, p. 11.—BUDDE-LUND, Crust. Isop. Terrestria, 1885, p. 268.

*Habitat.*—Key West, Florida; Punta Rassa, Florida; St. Thomas; Brazil.

Family XXII. TRICHONISCIDÆ.

ANALYTICAL KEY TO THE GENERA OF TRICHONISCIDÆ.

- a. Abdomen abruptly narrower than thorax. Head rounded in front, with distinct though small lateral lobes. Terminal abdominal segment truncate at tip..... 75. *Trichoniscus*.
- a'. Abdomen not abruptly narrower than thorax.
- b. Head triangularly produced in front, with large lateral lobes. Abdominal epimera lamellarly expanded ..... 76. *Actoniscus*.
- b'. Head rounded in front, not lobated at the sides. Abdominal epimera but little developed..... 77. *Scyphucella*.

75. *TRICHONISCUS* Brandt.

179. *TRICHONISCUS PUSILLUS* Brandt.

*Trichoniscus pusillus* BRANDT, Conspectus Monogr. Crust. Oniscodorum, p. 12, pl. iv, fig. 9.

*Itea riparia* KOCH, Deutschl. Crust., p. 22.

*Itea larvis* ZADDACH, Synops. Crust. Pruss., p. 16.

*Phylougria riparia* KINAHAN, Nat. Hist. Rev., IV, p. 281, pl. xxii, figs. 1–4.

*Trichoniscus pusillus* G. O. SARS, Crust. of Norway, II, Pts. 9 and 10, 1897, p. 161.

*Habitat.*—North America; also Sweden; Denmark; Germany; France; Great Britain; Spain; Algeria; coast of Norway.

## 76. ACTONISCUS Harger.

## 180. ACTONISCUS ELLIPTICUS Harger.

*Actoniscus ellipticus* HARGER, Ann. Jour. Sci., XV, 1878, p. 373; Proc. U. S. Nat. Museum, II, 1879, p. 159; Rep. U. S. Fish Comm., 1880, Pt. 6, p. 309-310, pl. 1, fig. 3.

*Armadilloniscus ellipticus* BUDDE-LUND, Crust. Isop. Terrestria, 1885, p. 239.

*Habitat*.—Savin Rock, near New Haven, Connecticut; Stony Creek, Long Island Sound.

*Depth*.—Found on beach.

On Sars's authority I have retained this genus with the *Trichoniscidae*, where he placed it.

## 77. SCYPHACELLA Smith.

## 181. SCYPHACELLA ARENICOLA Smith.

*Scyphacella arenicola* SMITH, Rep. U. S. Fish Comm., Pt. 1, 1874, p. 568 (274).—VERRILL, Rep. U. S. Fish Comm., Pt. 1, 1874, p. 337 (43).—HARGER, Proc. U. S. Nat. Museum, II, 1879, p. 157; Rep. U. S. Fish Comm., 1880, Pt. 6, p. 307-308, pl. 1, fig. 2. (See Harger for synonymy.)

*Trichoniscus arenicola* BUDDE-LUND, Crust. Isop. Terrestria, 1885, p. 249.

*Habitat*.—Egg Harbor, New Jersey; Nobska Beach, Vineyard Sound; Nantucket Island.

*Depth*.—Found on beach.

Sars places *Scyphacella* with the *Trichoniscidae*, where, following his authority, I have retained it.

## VI. EPICARIDEA or BOPYROIDEA.

## ANALYTICAL KEY TO THE FAMILIES OF EPICARIDEA.

- a*. Body of female distinctly segmented, more or less asymmetrical, twisted either to right or left. Maxillipeds lamellar, biarticulate, and more frequently exhibiting a small terminal joint. Legs in seven pairs, sometimes obsolete on one side. Incubatory plates five pairs, more or less arching over the ventral surface of the thorax. Pleopoda forming simple or double lamellæ, all of the same structure, rarely obsolete. Male with all the segments of the thorax sharply defined. Last larval stage with the flagellum of the antennæ four articulate; legs of uniform structure; uropoda with inner branch shorter than outer. Parasitic on decapodous crustacea. Family XXIII. BOPYRIDÆ (p. 577).
- a'*. Body of female perfectly symmetrical, the segmentation, as a rule, only visible in the middle of the dorsal face. Maxillipeds lamellar, without any terminal joint. Only five pairs of legs present. Incubatory plates comparatively small, sometimes greatly reduced in number, and scarcely at all partaking of the formation of the marsupium, which constitutes two separate cavities bounded by the lateral walls of the body itself. Pleopoda generally rudimentary or wholly absent. Male with head and first segment of thorax coalesced. Last larval stage with the flagellum of the antennæ five articulate; legs of the first pair shorter and thicker than the others; uropoda with the branches subequal. Parasitic on *Schizopoda*..... Family XXIV. DAJIDEÆ (p. 579).

## Family XXIII. BOPYRIDÆ.

## ANALYTICAL KEY TO THE GENERA OF BOPYRIDÆ.

- a. Body of female with one side greatly swollen and much longer than other. Segments of thorax only visible dorsally, coxal plates only present on shorter side. Abdomen consisting of five segments. Only first leg present on larger side; others wholly obliterated. Four pairs of pleopoda present. Male with abdominal segments fused ..... 78. *Phryxus*.
- a'. Body of female with neither side swollen. Thorax distinctly segmented. Abdomen consisting of six segments. All the legs present on both sides.
- b. Uropoda wanting.
- c. Pleopoda in female simple, lamellar ..... 79. *Bopyrus*.
- c'. Pleopoda in female obsolete, replaced by fleshy ridges ..... 80. *Bopyroides*.
- b'. Uropoda distinct. Pleopoda in female present. Legs of female with an adhesive process (exopod) attached to the coxal joint of all the legs. Feet end in blunt claw. Abdominal appendages form sharp, finely fringed branches. 81. *Leidya*.

## 78. PHRYXUS Rathke.

## 182. PHRYXUS ABDOMINALIS (Krøyer).

*Bopyrus abdominalis* KRØYER, Nat. Tidsskrift, II, 1840, pp. 102-289, pls. 1, II; Monog. Fremst. Slægten Hippolytes nordiske Arter, 1842, p. 263; Voy. en Scand., Crust., 1849, pl. XXIX, fig. 1.

*Phryxus hippolytes* RATHKE, Fauna Norwegens, 1843, p. 40, pl. II, figs. 1-10.

*Phryxus abdominalis* LILLJEBORG, Oeuvres. Kongl. Vet. Akad. Forh., IX, 1852, p. 11.—STEENSTRUP and LÜTKEN, Vidensk. Meddelelser, 1861, p. 275 (9).—BATE and WESTWOOD, Brit. Sessile-eyed Crust., II, 1868, p. 234.—NORMAN, Rep. Brit. Assoc., 1869, p. 288; Proc. Royal Soc. Lon., XXV, 1876, p. 209.—BUCHHOLZ, Zweite deutsche Nordpolfahrt, 1874, p. 287.—METZGER, Nordsee-fahrt der Pomm., 1875, p. 286.—MIERS, Ann. Mag. Nat. Hist. (4), XX, 1877, p. 65 (15).—SMITH in Harger, Proc. U. S. Nat. Museum, II, 1879, p. 158.—HARGER, Rep. U. S. Fish Com., 1880, Pt. 6. (See Harger for synonymy).—AXEL ONLIX, Bidrag till Kannedomen om Malakostrakfaunan i Baffin Bay och Smith Sound, 1895, p. 18-19.

*Habitat*.—Massachusetts Bay on *Pandalus borealis*, *Spirontocaris spinus*, *S. securifrons* and *Pandalus montagui*; Cashes Ledge, Gulf of Maine, on *Pandalus borealis* and *S. pusiola*; Georges Bank on *Pandalus leptocerus*; Halifax, Nova Scotia, on *S. pusiola*, *S. spinus* and *S. securifrons*; Cape Cod on *S. polaris*; Grinnell Land; Discovery Bay; Greenland; Cape Dudley Digges on *S. turgida* and *S. polaris*; Inglefield Gulf on *S. polaris*; 73° 48' N. lat., 80° 30' W. long. on *S. polaris*; 64° 56' N. lat., 66° 18' W. long., on *S. turgida*; also, British Isles; Scandinavian Coast; Spitzbergen; Kara Sea; Coast of Norway.

*Depth*.—5 to 25 furlongs.

## 79. BOPYRUS Latreille.

## ANALYTICAL KEY TO THE SPECIES OF BOPYRUS.

- a. Head posteriorly narrowed, triangular in shape. Antero-lateral angles not produced into lobes. Abdominal segments with lateral margins contiguous. Color whitish, feet and incubatory lamellæ pigmented with black. Male with eyes ..... 183. *Bopyrus palamonicicola* Packard.

*a*. Head posteriorly widened, rounded in shape. Antero-lateral angles produced into lobes. Abdominal segments with lateral margins not contiguous but separated by broad lateral incisions. Color white, feet and incubatory lamellæ not pigmented, Male without eyes. . . . . 184. *Bopyrus alpehi* Richardson.

183. BOPYRUS PALÆMONETICOLA Packard.

*Bopyrus palæmoneticola* PACKARD, Zool. for High Schools and Colleges, 1881.—GISSLER, Am. Nat., XVI, pp. 6-12.

*Bopyrus* (?) LEIDY, Proc. Ac. Nat. Sci. Phila., 1879, Pt. 2, p. 198.—HARGER, Report U. S. Fish Comm., 1880, Pt. 6, p. 312.

*Habitat*.—Atlantic City, New Jersey, on *Palæmonetes vulgaris* (Say).

184. BOPYRUS ALPHEI Richardson.

*Gyge* sp.? H. V. WILSON, American Naturalist, XXXIV, 1900, p. 353.

*Bopyrus alpehi* RICHARDSON, Proc. Wash. Acad. Sci., II, 1900, pp. 158, 159.

*Habitat*.—Beaufort, North Carolina, on *Alpheus heterochaelis*; Mangroves, Rio Parahyba do Norte, Brazil, on *Alpheus heterochaelis*.

80. BOPYROIDES Stimpson.

ANALYTICAL KEY TO THE SPECIES OF BOPYROIDES.

- a*. Lateral margins of thoracic segments, straight, contiguous, without any marginal indentation. Abdominal epimera truncate at tip. Terminal segment likewise truncate. . . . . 185. *Bopyroides hippolytes* (Krøyer).
- a*. Lateral margins of thoracic segments rounded with marginal indentation. Abdominal epimera rounded. Terminal segment likewise rounded. . . . . 186. *Bopyroides latreuticola* Gissler.

185. BOPYROIDES HIPPOLYTES (Krøyer).

*Bopyrus hippolytes* KRØYER, Grønlands Amfipoder, 1838, p. 306 (78), pl. iv, fig. 22; Monog. Fremst. Slegten Hippolytes Nordiske Arter, 1842, p. 262.—Voy. en Scand., Crust., 1849, pl. xxviii, fig. 2.—EDWARDS, Hist. Nat. des Crust., III, 1840, p. 283.—STIMPSON, Proc. Acad. Nat. Sci. Phila., 1863, p. 140.

*Gyge hippolytes* BATE and WESTWOOD, Brit. Sess. Crust., II, 1868, p. 230.—BUCHHOLZ, Zweite Deutsche Nordpolfahrt, 1874, p. 286.—METZGER, Nordseefahrt der Pomm., 1875, p. 286.—MIERS, Ann. Mag. Nat. Hist., (4), XX, 1877, p. 64 (14).—SMITH in HARGER, Proc. U. S. Nat. Museum, II, 1879, p. 157.—HARGER, Rep. U. S. Fish Comm., 1880, Pt. 6.—AXEL OHLIN, Bidrag till Kannedomen om Malakostrakfaunan i Baffin Bay och Smith Sound, 1895, p. 19.

*Bopyroides hippolytes* G. O. SARS, Crust. of Norway, II, Pts. 11, 12, 1897, pp. 199, 200, pl. LXXXIV, fig. 2.

*Habitat*.—Massachusetts, Bay of Salem, on *Spirontocaris spinus*, *S. fabricii* and *S. securifrons*; Casco Bay on *S. polaris* and *S. pusiola*; Bay of Fundy, on *S. spinus* and *S. pusiola*; Halifax, Nova Scotia; Gulf of Maine on *S. securifrons* and *S. spinus*; 73° 48' N. lat., 80° 30' W. long., on *S. polaris*; 72° 33' N. lat., 71° 30' W. long., on *S. polaris*; 71° 42' N. lat., 73° W. long., on *S. polaris*; 66° 33' N. lat., 61° 50' W. long., on *S. polaris*; 64° 56' N. lat., 66° 18' W. long., on *S. polaris*.

*Depth*.—5 to 15 fathoms.



## 186. BOPYROIDES LATREUTICOLA Gissler.

*Bopyroides latreuticola* GISSLER, Ann. Nat., XVI, 1882, pp. 591-594.

*Bopyrus latrentis* SPENCE BATE, Challenger Report, XXIV, 1888, p. 584.

*Habitat*.—Beaufort, North Carolina, on *Latreutes ensiferus* (Milne-Edwards) lat.  $28^{\circ} 17' 07''$  N., long.  $66^{\circ} 17' 37''$  W.; lat.  $31^{\circ} 15' 42''$  N., long.  $67^{\circ} 39' 10''$  W., on *Latreutes ensiferus* (Milne-Edwards); Bermuda.

## 81. LEIDYA Cornalia and Panceri.

## 187. LEIDYA DISTORTA (Leidy).

*Cepon distortus* LEIDY, Journ. Acad. Nat. Sci. Phila. (2), III, 1855, p. 150, pl. XI, figs. 26-32.—HARGER, Rep. U. S. Fish Comm., Pt. 1, 1874, p. 573 (279), Proc. U. S. Nat. Museum, II, 1879, p. 157.

*Leidya distorta* CORNALIA and PANCERI, Mem. R. Acad. Sci., Torino, II, XIX, 1861, p. 114.

*Cepon distortus* HARGER, Rep. U. S. Fish Comm., 1880, Pt. 6.—RICHARDSON, Ann. Nat., XXXIV, 1900, p. 309.

*Habitat*.—Atlantic City, New Jersey, in branchial cavity of *Uca pugnator*.

## Family XXIV. DAJIDÆ.

## 82. DAJUS Krøyer.

## 188. DAJUS MYSIDIS Krøyer.

*Dajus mysidis* KRØYER, Voy. en. Scand., Crust., 1849, pl. XXVIII, fig. 1.—LÜTKEN, Crustacea of Greenland, 1875, p. 150.—G. O. SARS, Arch., Math. Nat., II, 1877, p. 354 [254].—SMITH in Harger, Proc. U. S. Nat. Museum, II, 1879, p. 158.

*Bopyrus mysidium* PACKARD, Mem. Bos. Soc. Nat. Hist., I, 1867, p. 295, pl. VIII, fig. 3.

*Leptophryxus mysidis* BUCHHOLZ, Zweite Deutsche Nordpolfahrt, 1874, p. 288, pl. II, fig. 2.

*Dajus mysidis* HARGER, Rep. U. S. Fish Comm., 1880, Pt. 6, p. 312.

*Habitat*.—Labrador; Greenland; Kingigtok; Duck Island; Murchison Sound;  $73^{\circ} 48'$  N. lat.,  $80^{\circ} 30'$  W. long.;  $72^{\circ} 33'$  N. lat.,  $71^{\circ} 30'$  W. long.;  $71^{\circ} 57'$  N. lat.,  $73^{\circ} 56'$  W. long.;  $66^{\circ} 33'$  N. lat.,  $61^{\circ} 50'$  W. long.;  $64^{\circ} 56'$  N. lat.,  $66^{\circ} 18'$  W. long.; West Coast of Norway; Kara Sea; Sabine Island; Spitzberg; Jan Mayen; Murman coast.

*Depth*.—3 to 20 fathoms.